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CATALOG

OF THE

NEW HAMPSHIRE COLLEGE

OF

Agriculture and the Mechanic Arts

DURHAM, NEW HAMPSHIRE

1908-1909

PRINTED BY TELEGRAPH PUBLISHING CO., NASHUA.
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CALENDAR.

1908

JULY

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COLLEGE CALENDAR.

1908.

Sept. 14-15. Entrance examinations begin Monday at 9 a. m.
Sept. 16. Registration, Wednesday. First semester begins.
Oct. 7. Stated meeting of Trustees.
Dec. 18. College closes Friday night.

CHRISTMAS VACATION.

1909.

Jan. 5. College opens Tuesday, at 8 a. m.
Jan. 13. Stated meeting of Trustees.
Feb. 1-5. Mid-year examinations.

WINTER VACATION.

Feb. 10. Registration, Wednesday. Second semester begins.
Apr. 14. Stated meeting of Trustees.
Apr. College closes Wednesday night preceding Fast Day.

SPRING VACATION.

Apr. College opens Tuesday following Fast Day, at 8 a. m.
June 8. Senior examinations completed 4 p. m.
June 9-14. Final examinations.
June 13. Baccalaureate sermon, Sunday at 10.45 a. m.
June 14. Prize Drill, 8 p. m., in the Armory.
June 15. Class Day. Stated meeting of Trustees.
June 16. Commencement Day. Senior promenade at 8 p. m.

SUMMER VACATION.

Sept. 10-14. Examinations for admission begin Friday at 9 a. m.
Sept. 15. Registration, Wednesday. First semester begins.
Oct. 13. Stated meeting of Trustees.
Dec. 17. College closes Friday night.

CHRISTMAS VACATION.

1910.

Jan. 4. College opens Tuesday at 8 a. m.
Jan. 12. Stated Meeting of Trustees.
Jan. 31—Feb. 4. Mid-year examinations.

WINTER VACATION.

Feb. 9. Registration, Wednesday. Second semester begins.

BOARD OF TRUSTEES.

His Excellency, Gov. CHARLES M. FLOYD, *ex officio.*

CHARLES W. STONE, A. M., East Andover, *President.*
Term expires Oct. 9, 1909.

Pres. WILLIAM D. GIBBS, Durham, *ex officio.*

Hon. LUCIEN THOMPSON, Durham, *Secretary.*
Term expires June 14, 1910.

Hon. JOHN G. TALLANT, Pembroke.
Term expires July 20, 1909.

Hon. WARREN BROWN, Hampton Falls.
Term expires June 14, 1910.

Hon. ROSECRANS W. PILLSBURY, Londonderry.
Term expires Oct. 7, 1909.

Hon. RICHARD M. SCAMMON, Stratham.
Term expires Aug. 30, 1911.

WALTER DREW, Colebrook.
Term expires Aug. 30, 1911.

Hon. NAHUM J. BACHELDER, M. S., A. M., East Andover.
Term expires Jan. 5, 1911.

GORDON WOODBURY, A. B., Ph. D., LL. B., Bedford.
Term expires Dec. 2, 1908.

EDWARD H. WASON, B. S., Nashua, *Alumni Trustee.*
Term expires July 1, 1910.

GEORGE W. CURRIER, M. D., Nashua.
Term expires June 14, 1910.

WALTER M. PARKER, A. B., Manchester, *Treasurer.*

OFFICERS OF INSTRUCTION AND ADMINISTRATION.

WILLIAM D. GIBBS, D. Sc., President of the College.

CHARLES H. PETTEE, A. M., C. E., *Dean and Professor of Mathematics.*

CLARENCE W. SCOTT, A. M., *Professor of History and Political Economy.*

FRED W. MORSE, M. S., *Professor of Organic Chemistry.*

CHARLES L. PARSONS, B. S., *Professor of Inorganic Chemistry.*
FREDERICK W. TAYLOR, B. Sc. (Agr.), *Professor of Agronomy.*
E. DWIGHT SANDERSON, B. S., B. S. Agr., *Professor of Zoology and Entomology and Director of the Experiment Station.*
ARTHUR F. NESBIT, S. B., A. M., *Professor of Physics.*
WILLIAM E. HUNT, B. S., *Captain Twenty-Second U. S. Infantry, Professor of Military Science and Tactics.*
RICHARD WHORISKEY, JR., A. B., *Professor of Modern Languages.*
FREDERICK W. PUTNAM, B. S., *Professor of Drawing and Design.*
CHARLES BROOKS, PH. D., *Professor of Botany.*
CHARLES E. HEWITT, B. S., M. M. E., *Professor of Electrical Engineering.*
BETHEL S. PICKETT, B. S., *Professor of Horticulture.*
ERNEST R. GROVES, A. B., B. D., *Professor of English and Philosophy.*
FORREST E. CARDULLO, M. E., *Professor of Mechanical Engineering.*
FRED RASMUSSEN, B. S. A., *Associate Professor of Dairying.*
WILLIAM H. PEW, B. Sc. (Agr.), *Associate Professor of Animal Husbandry.*
CHARLES JAMES, F. I. C., *Assistant Professor of Inorganic Chemistry.*
A. M. BUCK, M. E., *Assistant Professor of Electrical Engineering.*
FRANK R. BROWN, B. S., *Instructor in Machine Work.*
DAVID L. RANDALL, PH. D., *Instructor in Chemistry.*
RAY A. SPENCER, A. B., *Instructor in English and Modern Languages.*
HARRY E. INGHAM, B. S., *Instructor in Wood Work.*
THOMAS J. LATON, B. S., *Instructor in Drawing.*
WILLIAM M. BARROWS, B. S., S. M., *Instructor in Zoology.*
C. FLOYD JACKSON, B. S., M. A., *Instructor in Entomology.*
ISAAC M. LEWIS, A. B., A. M., *Instructor in Botany.*
JASPER F. EASTMAN, B. S., *Assistant in Agronomy.*
WILLIAM H. WICKS, M. S. (Agr.), *Assistant in Horticulture.*
JOHN C. MCNUTT, B. S. (Agr.), *Assistant in Animal Husbandry, Herdsman.*
OSCAR W. STRAW, *Engineer and Curator of Buildings.*
DAVID LUMSDEN, *Foreman of Gardens and Greenhouse.*
GEORGE S. HAM, *Farm Foreman.*
MABEL E. TOWNSEND, A. B., *Registrar.*
MABEL HODGKINS, A. B., *Librarian.*

CHARLOTTE A. THOMPSON, *Assistant Librarian.*
NELLIE F. WHITEHEAD, *Purchasing Agent.*
LAVINIA BROWN, *Bookkeeper.*
MARCIA SANDERS, *Matron of Smith Hall.*

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

BOARD OF CONTROL.

HON. JOHN G. TALLANT, *Chairman,*	Pembroke
CHARLES W. STONE, A. M., *Secretary,*	East Andover
HON. WARREN BROWN,	Hampton Falls
HON. N. J. BACHELDER, A. M., M. S.,	East Andover
PRES. WILLIAM D. GIBBS, D. Sc., *ex officio,*	Durham

THE STATION STAFF.

E. DWIGHT SANDERSON, B. S., B. S. Agr., *Director and Entomologist.*
FRED W. MORSE, M. S., *Vice-Director and Chemist.*
FREDERICK W. TAYLOR, B. Sc. (Agr.), *Agriculturist.*
CHARLES BROOKS, PH. D., *Botanist.*
FRED RASMUSSEN, B. S. A., *Dairyman.*
WILLIAM H. PEW, B. Sc. (Agr.), *Animal Husbandman.*
BETHEL S. PICKETT, B. S., *Horticulturist.*
BERT E. CURRY, M. S., *Associate Chemist.*
JASPER F. EASTMAN, B. S., *Assistant Agriculturist.*
C. FLOYD JACKSON, B. S., M. A., *Assistant Entomologist.*
WILLIAM H. WICKS, M. S. (Agr.), *Assistant Horticulturist.*
ISAAC M. LEWIS, A. B., A. M., *Assistant Botanist.*
DAVID LUMSDEN, *Assistant in Floriculture.*
JOHN C. McNUTT, B. S. (Agr.), *Herdsman.*
NELLIE F. WHITEHEAD, *Purchasing Agent.*
MABEL H. MEHAFFEY, *Stenographer.*
LAVINIA BROWN, *Bookkeeper.*

FOUNDATION AND ENDOWMENT.

The New Hampshire College of Agriculture and the Mechanic Arts was incorporated by the state legislature in 1866, under the

provisions of the act of Congress, approved July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts," the grant of land having been accepted by an act of legislature, approved July 9, 1863.

The act of 1862 provides that the income from the investment of the money realized from the sale of the lands shall be appropriated "to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, * * * in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The "Morrill Bill," which was approved August 30, 1890, and received the assent of the state by an act of legislature, approved February 13, 1891, provides an appropriation for the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts, established under the provisions of "the act of 1862."

The appropriation under the Morrill act is "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural, and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Under an act of Congress approved March 2, 1887, which received legislative assent August 4, 1887, was established that department of the college known as the Agricultural Experiment Station, the purpose of which was "to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science."

Benjamin Thompson, who died January 30, 1890, was a resident of Durham, and a farmer by profession. He had at heart the agricultural interests of his native state, and in the furtherance of those interests he bequeathed to it at his death his whole estate with a few minor reservations.

Mr. Thompson's final statement of the object of his bequest was as follows: "My object being mainly to promote the improvement of agriculture, though willing that the college to be established should also provide for the mechanic arts, it is my

will that the institution to be established by the state * * * shall be called and designated * * * The New Hampshire College of Agriculture and the Mechanic Arts, if that shall be the wish of the state; and that in addition to the instruction to be given therein, as provided by my said will, there shall be taught only such other arts or sciences as may be necessary to enable said state to fully avail itself of said donation of lands by the government in good faith, which two branches of instruction shall be the leading objects of said institution or college."

By the provisions of the will, the income from this source will not, however, become available until 1910. This endowment will amount at that time to nearly $800,000, the annual income from which will be about $32,000.

The state legislature accepted the Thompson bequest March 5, 1891, and on April 10, of the same year appropriated $100,000 for buildings. Approximately $50,000 was realized from the sale of property and from other sources. In 1893 an additional appropriation of $35,000 was made by the state for completing and furnishing the buildings. Accordingly, in 1893 the college was moved from its first home at Hanover to its present location at Durham.

The general government of the college is vested in a board of thirteen trustees. The governor of the state and the president of the college are trustees, *ex officio;* the alumni of the college elect one trustee; and all other trustees are appointed by the governor of the state, with the advice and consent of the council.

The college is executing the trust reposed in it by giving instruction in the various courses described in this catalog, under the prescribed heads of "agriculture" and "the mechanic arts."

SITUATION.

Durham, the present site of the college, is on the Western Division of the Boston and Maine Railroad, 62 miles from Boston, and about midway between Rockingham Junction and the City of Dover, being five miles from the latter place.

SUNDAY SERVICES.

Although the only church in Durham is nominally Congregational, it is attended by citizens of all denominations, and sectarian lines are never drawn. It is conveniently situated, and offers ample opportunity for religious observance.

GENERAL INFORMATION.

New Hampshire College offers the following courses:

1. Agricultural courses.
   a. Four year course.
   b. Two year course.
   c. Ten week course.
2. Mechanical Engineering Course.
3. Electrical Engineering Course.
4. Chemical Engineering Course.
5. General Course.

The college is a part of the public school system of the state. It stands in its agricultural, mechanical engineering, electrical engineering, technical chemistry, and general scientific courses, in the same relation to the high schools that the high schools stand to the grammar schools, and that these in turn stand to the elementary schools. In other words, it is a continuation of the grades of the public school system of the state, with special reference to the industrial pursuits, and, in the courses that are provided as described elsewhere in this catalog, it aims to give a practical training that shall fit the student to deal with the problems of life.

TUITION AND FEES.

Tuition is $60 a year; fees, which include all charges commonly considered extras, except those for breakage and damage to college property, are $20 a year. They are payable in advance in two equal instalments, one on the first day of each semester.

SCHOLARSHIPS.

Scholarships are awarded each semester at the discretion of the faculty to resident students of New Hampshire. They may be forfeited at any time for misconduct and will not be awarded except by special permission of the president, to students in the four year courses who have failed to secure an average grade of seventy or over in the previous semester. They are given for the purpose of aiding deserving students and will be withdrawn from those who use intoxicating liquors or tobacco.

Conant Scholarships.—There are twenty-five Conant scholarships, each paying tuition, $60, fees, $20, cash, $20,—total, $100. These are assigned under the following conditions:

They are to be given to young men taking an agricultural course.

Each town in Cheshire County is entitled to one scholarship, and Jaffrey is entitled to two.

They will be reserved for their respective towns until August 1 of each year. Those not taken by students from Cheshire County, and those in excess of the number of towns, will then be assigned to agricultural students from other parts of the state, and may be divided at the discretion of the president.

Senatorial Scholarships.—There are twenty-four senatorial scholarships,—one for each senatorial district. Each scholarship is to pay tuition, $60. Senatorial scholarships not filled may be assigned to students from other localities at the discretion of the faculty; they are open to students in all courses.

Grange Scholarships.—Each subordinate and Pomona grange in New Hampshire has the privilege of appointing one student annually to a free scholarship in any of the four year or two year courses in the college. Each scholarship is to pay the tuition of $60.

The method of appointment is entirely at the option of the grange; it may be by election, competitive examination, or otherwise. Holders of these scholarships need not be members of the grange.

Valentine Smith Scholarships.—Through the generosity of the late Mr. Hamilton Smith of Durham, the sum of $10,000 has been given to the college to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission to the college; *provided*,

"That the income shall be paid to the student to whom it is awarded, in eight semi-annual payments, at the time appointed for the payment of term bills; and

"That if the student receiving this scholarship shall at any time prove unworthy, in the judgment of the faculty, by reason of defective scholarship or character, he shall forfeit his claim to the student most deserving; and

"That if the student receiving this scholarship shall cease to be a member of the college, the income from this fund, for the unexpired term, shall be awarded to the student most deserving in character and scholarship."

By vote of the faculty, these scholarships will be forfeited by failure to obtain an average grade of 75 per cent. for any semester.

These scholarships yield $400 annually or one hundred dollars to each holder.

Competitive examinations for this scholarship will be held at the college at the time of the entrance examinations in September, and at no other time. They are not restricted to residents of New Hampshire.

PRIZES.

Bailey Prize.—Dr. C. H. Bailey, of Gardner, Mass., and E. A. Bailey, B. S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason of Stamford, Conn., has invested one hundred dollars as a memorial to her son, a member of the class of 1893, the income of which is to be given, for the present, to that member of the senior class who has made the greatest improvement during his course.

COLLEGE AID TO STUDENTS.

Students obtain considerable financial aid by janitorships, and work on the farm and in the greenhouse. They also find employment with the power and service department of the college and with the experiment station.

ESTIMATE OF FRESHMAN EXPENSES.

Tuition,	Free	$60.00
Text-books,	$10.00 to	25.00
Military uniform for new students,	16.00 to	16.00
Drawing instruments and materials,	10.00 to	25.00
Fees,	20.00 to	20.00
Room rent, including heat and light,	30.00 to	50.00
Board, $3 to $3.50 per week, for thirty-six weeks,	108.00 to	126.50
Total,	$194.00	$322.50

Room rent is estimated on the supposition that two students occupy the same room or suite of rooms.

The college has no rooms for men students. Rooms may be obtained either furnished or unfurnished, in buildings under private control, and are for the most part provided with heating apparatus, electric lights and baths.

Women students, unless living at home, are required to room in Smith Hall, the woman's dormitory. Circulars giving terms, etc., may be obtained from the Registrar, New Hampshire College, Durham, New Hampshire.

REGISTRATION.

All undergraduate students who desire to attend the college during a given semester are required to register at the registrar's office before 4 p. m. of the first day of such semester. Every former student registered after the first day of any semester shall be charged for such registration a fine of one dollar for the first day and fifty cents additional for each succeeding day, to be remitted only by the president upon presentation of a substantial excuse for the delay.

ELECTION OF STUDIES.

Every student shall, on or before the Saturday before the last in each semester, notify in writing the secretary of the faculty of his elections for the semester following. Any student who, having made his elections, desires to change, shall make application to the faculty in writing with a statement in full of his reasons.

Any student who fails to fill out his elective slip on or before the date mentioned shall pay a fine of one dollar before he can be registered for the studies of the next semester, unless he has previously obtained from the secretary of the faculty a written excuse for delay.

No student shall be permitted to make changes in courses elected by him after one week from the time of his registration in each semester, except by vote of the faculty and the payment of one dollar.

ATTENDANCE AND EXCUSES.

All male students, unless members of the senior class or physically unfit, are required to attend military drill.

All students are required to attend chapel exercises. Students accumulating more than six unexcused absences from chapel during any semester shall be placed on probation.

Attendance upon class work is, in general, under the control of the heads of departments concerned. However, excuses for absence for one day or more, may be obtained of the dean in advance, and should be passed to the registrar by the student not later than twenty-four hours after the termination of such

absence. Excuses for absence for less than one day should be obtained of the instructors concerned. If excuses are for an indefinite time, the student must report to the registrar within twenty-four hours after his return to his studies, if he wishes to receive credit for his excuses.

In no case will such excuse relieve the student from class work.

Any head of a department may, without faculty action, exclude from examination any student who has been absent from twenty per cent. of the exercises of any class under his charge.

All classes shall begin at seven minutes after the hour scheduled, and close promptly at the end of the hour.

AMOUNT OF WORK.

No student shall be permitted to carry less than sixteen or more than twenty-two credit hours per week of classroom work or its equivalent, without the consent of the faculty.

REMOVAL OF DEFICIENCIES BY EXAMINATION.

Students conditioned on entrance examinations may have an opportunity to make up such deficiencies upon the three days preceding the beginning of each semester, and upon the last Saturday of each semester. A student who takes a deficiency examination upon an entrance subject at any other time must pay the college one dollar for each examination upon each subject.

Students who have any entrance condition outstanding at the beginning of the third year of residence at the college or more than one at the beginning of the second year shall not be allowed to register until such conditions have been removed.

Dates for re-examination in conditioned subjects are fixed at the discretion of the instructor. No requests for examinations will be granted on less than two weeks' notice except on the regular dates for examinations in entrance deficiencies.

BUILDINGS.

THOMPSON HALL.

Thompson Hall, the main college building has a length of 128 feet, exclusive of a *porte-cochère* 40 feet long, and a width of 93 feet in the widest part. It is built of granite and brick, and has three stories besides the basement.

The basement contains a blower-room, with apparatus for controlling the heating and ventilation of the building, a geological laboratory, a lavatory, and storage rooms.

One half of the first floor is occupied by the mechanical and free hand drawing and machine design rooms. The remainder of the first floor is used for offices, recitation rooms for mathematics and history, and a waiting room for women.

On the second floor are more offices, the zoological laboratories and recitation rooms for biology, mechanical engineering, English and modern languages.

On the third floor are the large hall used as an auditorium, two society rooms, and the bell-boy's room.

The building is lighted by gas and electricity, and provided with the most approved system of heating and ventilation.

LIBRARY BUILDING.

The library building, completed this year, was made possible by the generosity of Mr. Andrew Carnegie and by an act of consolidation whereby the college assumed the care of the Durham libraries and added to its building fund a sum of money which Mr. Hamilton Smith, late of Durham, provided for a public library building. It is a two-story building, with a frontage of 75 feet and a depth of 65 feet, not including the stack extension, which gives shelving room for sixty thousand volumes. On the main floor are the delivery, reference, reading, and children's rooms and the librarian's office. The second floor is used for seminar and lecture rooms. The stack room is fitted with a three-story stack, the second floor being on a level with the main floor of the library.

MORRILL HALL.

This building was erected in 1902 at a cost of about $30,000. It is 110 feet long and 58 feet wide, comprising four stories, including the basement. The material is brick, laid in Flemish bond, with trimmings of the clear, almost white Suncook granite. The roof is of slate, and the construction throughout is designed to give the greatest possible security against fire. All the partition walls are of brick, and the steam for heating is taken from the boilers at the central station, near the mechanical building.

The basement contains an agricultural museum, a live stock judging room, a bulletin mailing room, and a soil storage room.

The first floor is occupied by the department of agriculture. It contains two class rooms—one for agronomy and one for ani-

mal industry—a soil physics laboratory with a preparation room attached, and offices. The agricultural experiment station library of over 1,000 volumes and the office of the director of the agricultural experiment station are also on this floor.

The second floor is occupied by the horticultural department. It contains one class-room, a pomological laboratory, a forestry laboratory, a herbarium room, a horticultural and agricultural reading-room and offices. The second floor is also provided with a refrigerator room, in which the fruits and vegetables used for laboratory work may be preserved.

CONANT HALL.

Conant Hall contains the laboratories and lecture-rooms for instruction in chemistry, physics and electrical engineering. It is a substantial brick building, 92 by 70 feet, and three stories high, including the basement. It is heated by steam brought from the shops, lighted by gas and electricity and provided with a system of thorough ventilation. Water, gas, high pressure steam, hydrogen, oxygen, vacuum and blast are supplied through pipes wherever needed, and the lecture rooms in addition have switches controlling both dynamo and battery currents, and arrangements for stereopticon illustration.

The basement contains a small workshop, the battery, photometer, photographic and comparator rooms, a clock room protected by double walls against changes in temperature, an acid room and a water and gas laboratory provided with the necessary fixtures and appliances.

The first floor, with the exception of one room, is occupied by the departments of physics and electrical engineering. It contains the mineralogical laboratory, which is provided with tile-covered desks and other facilities for blowpipe analysis; the junior physical laboratory; an apparatus room; the department libraries of physical and electrical books and periodicals; an electrical laboratory; and the physical lecture room.

The second floor is given up entirely to the chemical department. It contains storerooms, an organic laboratory, a qualitative laboratory, a private laboratory, a dark room for polariscopic and spectroscopic work, a lecture-room provided with facilities as before described, a quantitative laboratory, and a room for the delicate chemical balances and most important reference works.

The laboratories are fitted up with modern accessories and with special reference to the kind of work to be performed in each.

SHOPS.

These have been built in order to provide facilities for instruction in the working of wood and metals. The buildings are constructed on the "slow burning" principle, with thick walls, and heavy, continuous plank floors.

The main building is 42 by 106 feet, and two stories high, with a basement 31 by 42 feet. The basement and westerly rooms are used as an engine room and mechanical laboratories. On the first floor is the machine shop and on the second are the wood shop and stock and pattern room.

Joined to the main shop building and on a level with its basement is a one-story building, 40 by 100 feet, containing the boiler room, forge shop and foundry.

There are three boilers, aggregating 360 horse-power, which furnish steam to all the college buildings, wherever needed for heating or power. A brick chimney, 95 feet high, carries away the waste gases from the furnaces.

THE ARMORY.

The armory is a brick building with granite trimmings, 61 by 99 feet, with a headhouse, 31 by 46 feet. In the basement are two bathrooms, containing shower baths, one for the use of the faculty and visiting teams, and the other for students. Adjoining these are a locker room, a drying room, a toilet room and a room for gymnasium supplies. There is also a space reserved for a swimming pool, bowling alley, ball cage, etc., to be completed at some future time.

On the first floor are the military lecture room, three offices and the drill hall or gymnasium, with a running track six feet wide.

The equipment of the gymnasium includes chest weights, dumb bells, Indian clubs, wands, bucks, horses, horizontal and parallel bars, travelling rings, ladders, punching bags, etc.

On the second floor of the headhouse are the college club rooms.

NESMITH HALL.

Nesmith Hall, a two-story brick building, is occupied by the chemical, botanical and dairy departments of the agricultural experiment station. It contains the offices, libraries and laboratories of the chemical and botanical departments and the office of the dairy department. The recitation room of the botanical department is also in this building.

DAIRY.

The dairy building is a wooden structure of one and one-half stories, with basement. It contains six rooms equipped for manual training in milk testing, milk and cream pasteurizing, cream ripening, butter-making and the care and management of dairy machinery.

The first floor is used for receiving milk and for the separators. On this floor are also the office of the associate professor of dairying and the laboratory for milk testing. The basement contains the ripening vats, churns and refrigerators, together with the engine.

BARNS.

The dairy barn is a large wooden structure, 45 by 100 feet, two stories high, and with a basement in which are box stalls, calf and sheep pens, a cold storage room, root cellar, feed, dressing and milk rooms. A story and a half ell, 35 by 100 feet, with basement, is attached to the main structure. The first floor of the ell is on a level with the basement of the main barn and contains stalls to accommodate 56 head of cattle. The basement of the ell contains pig pens, while the loft is used for the storage of feed, fertilizers and machinery. With the exception of the space occupied by a granary, a 120-ton silo and a 12-foot driveway, the upper floors of the main barn are used entirely for hay and forage, there being capacity for about 175 tons.

A new sheep barn built in the summer of 1907, houses about 80 sheep; the pens being sub-divided to accommodate those of different sizes. In this barn is storage room for twenty tons of hay and a considerable amount of grain.

A third barn is used by the agricultural department for the storage of hay, implements and wagons and for stabling the department horses.

A fourth barn, 25 by 60 feet, is used by the horticultural department for its horses and wagons and the storage of spraying machines and various garden implements.

GREENHOUSES.

The new range of greenhouses has been specially planned and built for carrying on modern and up-to-date work in greenhouse management and handicraft. There are seven houses, besides a propagating hallway. Connected with the glass structure is a workroom, 20 by 30 feet, which also answers as an office for the

florist, and is equipped with scales, seed-boxes and other accessories. The basement of the workroom, or potting house, is used for a boiler room and storeroom for potting soils. The whole is heated by steam and the houses are piped so that the temperature may be regulated for any kind of crop. One house is equipped for greenhouse management instruction and each student is given definite laboratory space and prescribed work. Two of the houses have ground beds and are adapted for forcing vegetables. The remaining houses have raised beds, excepting the center of the palm house, which has a ground bed.

These houses are lighted with electricity and offer unusual facilities for instruction and experimentation.

SMITH HALL.

Smith Hall, the woman's dormitory was made possible by the generosity of Mrs. Shirley Onderdonk, of Durham, who gave sixteen thousand dollars as a memorial to her mother, Mrs. Alice Hamilton Smith. The balance of the cost, $10,000, was provided by the state.

It is a three and one-half story brick building, 86 feet long by 36 feet deep, built in "Old English" style, with granite trimmings and gable roof. The main entrance faces the south and opens into a large hall-way.

On the right of the entrance is the dining room and to the left a handsome reception room. In the rear of the reception room are the office and apartments of the matron; back of the dining room are the serving room, kitchen and pantry. In the basement are the boiler room, trunk room, drying room, laundry, and rooms for storage and fuel. The second and third floors are for student accommodations, each floor being equipped to accommodate sixteen students, and provided with toilet rooms and baths (shower and tub).

The building is heated by steam and lighted by electricity. The interior finish is of stained cypress, with hard wood floors.

LABORATORIES AND EQUIPMENT.

AGRONOMY.

This department is provided with a collection of dried specimens of the different forage crops; the more important varieties of corn, wheat and oats; and with a large number of lantern

slides, grass charts and other illustrative material. The soil physics laboratory is equipped with soil bins, a compacting machine, chemical and torsion balances, and various kinds of physical apparatus for the study of soils, including that for the determination of specific gravity and for the making of mechanical analyses.

The agricultural museum contains many of the latest models of the different makes of farm machinery, tools and appliances, including plows, cultivators, harrows, mowers, rakes, corn and grain binders, threshers, manure spreaders, different kinds of cattle ties and various makes of patent wire fences.

The college farm, with its 300 acres of land, has a variety of soils and soil conditions suited to the growth of nearly all the important farm crops, and thus offers excellent opportunities for practical work and demonstration in the department of agronomy.

ANIMAL HUSBANDRY.

For the various courses in animal husbandry an extended use is made of the live stock of the college farm. The dairy herd consists of representative animals of the following breeds: Ayrshires, Guernseys, Jerseys, Holsteins and Shorthorns. The college owns seven head of horses representing the draft type, and to become acquainted with the standard bred types the students are taken to various stock farms where these types may be inspected and judged.

For the study of the different breeds of sheep and swine the experiment station flocks of pure bred Southdowns, Dorset Horns, Shropshires, Hampshires, Lincolns and Merinos and herds of Yorkshires are used.

In the agricultural building a large room is fitted up for the judging of live stock; instruments for precise measurements are provided and score cards with a scale of points for each kind of animal are used.

The class-room is provided with a stereopticon lantern and a large collection of lantern slides is used to show the leading individuals of several breeds of live stock. The herd books of the several breeds are made use of in familiarizing the student with methods of tracing pedigrees and the practices of breeders' associations.

HORTICULTURE.

The facilities for instruction in the various lines of horticulture have vastly improved during the past few years.

The lecture room is fitted up with a stereopticon lantern and the collection of lantern slides is being continually enlarged. The pomological and vegetable gardening laboratories are of original design and offer every facility for modern work. A great many varieties of vegetables are grown in the experiment station trial ground, and these offer exceptional opportunities for identification and study in the laboratory for some time after field conditions have gone by. The orchards, gardens and grounds also offer opportunities for demonstrating the theories advocated in the lecture-room. Many varieties of different kinds of fruit are to be found in the orchards. Grapes, apples, cherries and small fruits are also grown at the agricultural experiment station. Propagation of fruits, shrubs and flowering plants is practised. A fine collection of Vilmorin charts is owned by the department.

COLLEGE FOREST.

A tract of 60 acres of old forest growth is owned by the college. It is located close at hand and offers ample opportunities for studying forestry. The country about Durham presents forestry conditions typical of New England, and the transplanting of trees, sowing of seeds and general questions of forestry management may here be studied in Nature's laboratory.

DAIRYING.

All available space in the dairy building is filled with various forms of cream separators, churns, testing apparatus and other dairy appliances. In addition to the product of the college herd, milk is received from about 25 farms in Durham and vicinity. Through this arrangement the college is able to furnish plenty of milk for practice work and to provide for a most thorough and practical training in dairy and creamery management.

MECHANICAL ENGINEERING.

A 40 horse-power engine furnishes power for the shops and electric lights for the college buildings. A large compound duplex pump receives water under a head of 15 feet through an eight-inch pipe from a reservoir one-half mile distant, and forces it through underground mains to the various hydrants and buildings or through nozzles for measurements during tests. It is fitted with indicator motions and other necessary equipment for complete duty tests. The pump with its long supply pipe, a 10-inch standpipe and a 6000-gallon tank, furnish apparatus for an extensive series of hydraulic experiments.

Among other apparatus is a 50,000-pound Olsen machine with the necessary tools and measuring instruments for tension compression and transverse tests; a 12 horse-power gas engine; a Westinghouse air-brake pump with locomotive and tender attachments; steam and gas engine indicators; a surface condenser; a Bristol pyromoter; Pitot tubes; differential gauges; cement testing machine with the necessary sieves and other apparatus for testing cement according to the recommendations of the committee for cement testing; and the usual supply of scales, gauges, thermometers and small apparatus. The three 66" return tubular boilers, with the 95 foot brick stack are used for boiler tests and flue gas analysis, by means of the Orsat apparatus, pyrometers and thermometers reading to 1,000 F. The boilers are fitted with forced draught apparatus, thus giving an opportunity for commercial tests with different grades of fuel, especially the cheaper grades. The ventilating fans and engines of the various buildings as well as the engines at the creamery, electrical laboratory and barn are available for testing. Opportunity is not only given for the student to test the engine or machine but to become familiar with its construction and operation.

In addition to the instruction given in the laboratory, excursions are made to various outside power plants, and when practicable, tests are made, thus enabling the student to become familiar with various types of engineering practice. Each year the proprietors of a nearby mill allow the class in valve gears to take exercises in valve setting on their 50 horse-power Corliss engine.

SHOPWORK.

The course in wood work consists of practice in carpentry, joinery and turning. Following this work is the course in pattern making, special attention being given to methods of design. The shop is supplied with benches and the necessary tools to accommodate twenty students at one time. Other equipment consists of a circular saw, board-planer, buzz-planer, jig-saw, speed-lathes, a large pattern maker's lathe with molding and boring attachments.

In the machine shop the student learns the principles of turning, facing, thread cutting, milling, shaping, scraping, filing and planing. In the advanced courses, parts of machinery are made to be used in the shops. The equipment is as follows: seven engine lathes, a 14-inch by 6-foot speed-lathe, built by students; a vertical drill, built by students; a 30-inch Flather

planer; a universal milling machine with gear-cutting and spiral attachments; shaper, power hack saw; tool grinder; 12 benches with vises, and a large number of small tools, including micrometer, calipers and gauges necessary for accurate work.

In the forge shop are 18 Sturtevant down-draft forges with anvils and necessary tools. The blast to the forges is furnished by a No. 4 blower, and the smoke carried away by a 60-inch exhauster. These are driven by a small steam engine. The student is taught the principles of forging, welding and tempering of iron and steel. Special attention is given to accuracy of dimensions as well as to shape and finish.

Foundry work is taken in connection with the course in pattern making, and the student molds and casts from the patterns he has constructed in the wood-shop. Castings are made in iron, brass and alloy, and tests are made on "test bars" of each. The foundry is supplied with a furnace, molding benches and bench tools.

PHYSICS.

The physical laboratory has a collection of the usual apparatus for laboratory work and lecture-room illustration, to which will be continually added pieces purchased or made in the college shop.

In the junior laboratory of physics there has been added apparatus for studying absorption phenomena and the comparison of spectra of films, liquids, metals, etc.; for measuring the angles of crystals and indices of refraction; for verifying the laws of refraction and total reflection of light; for determining the moment of inertia of various forms of specimens.

In electricity and magnetism the equipment includes instruments such as a magnetometer for studying the intensity of the earth's magnetism; a universal tangent galvanometer and an assortment of ammeters and voltmeters for measuring direct and alternating currents and voltages.

ELECTRICAL ENGINEERING.

The electrical engineering laboratories consist of two dynamo rooms, a transformer room, a photometer room and a storage battery room. In the main dynamo room there is a large distributing switchboard on which are mounted instruments, switches and plugging devices so arranged that it is possible to connect the laboratory rooms, also each lecture room, and convey thereto direct current and single phase, two phase and three phase alternating currents.

The general equipment of this department includes a magnetometer for studying the intensity of the earth's magnetism; a universal tangent galvanometer; a high grade four spool Thomson reflecting galvanometer; a D'Arsonal galvanometer; a Ryan electrometer for tracing pressure and current waves; a standard ballistic galvanometer; an Ayrton and Perry's variable standard of self-induction; as well as other types of instruments of various sizes for elementary work; also a complete Queen's photometer equipment for comparing incandescent and arc lamps and the distribution of light from the latter for open, enclosed and flaming arcs and when used with different forms of reflectors.

The equipment of the dynamo electric laboratory consists of 2 Edison bipolar 3 K. W. generators, an Edison bipolar 15 K. W. generator; a General Electric 4 pole 12 K. W. generator; a Crocker-Wheeler 3.5 K. W. generator, a Century 5 H. P. motor; a Westing house 5 H. P. motor with wound secondary; a Westinghouse 23 H. P. Junior type of engine; a Thompson-Houston 3 K. W. generator; two ¼ H. P. direct current motors; a low potential testing unit, consisting of a universal alternator belted to a direct current motor and capable of adjustment to be driven from either the direct or alternating current side; a ½ K. W. special alternator arranged for single, two and three phase currents connected either star or mesh; a storage battery of 60 cells, of the Cloride type, with special switchboard; various sizes and types of transformers; standard makes of voltmeters and ammeters having wide ranges; wattmeters; power-factor meters; phase indicators; hysteresis testing apparatus of the Holden-Esterlin type; high tension transformers for testing commercial value of various insulating materials and insulators; and various other testing instruments.

In connection with this department, there is a work shop equipped with a 14" 8 foot bed, Flather engine lathe with a complete set of attachments; a good set of wood and metal working tools; also a small speed lathe for drilling and wood working purposes, a union combination saw with scroll, molding and boring attachments, a small hand-driven metal planer and sensitive drill. This shop and its equipment are of great value in thesis work and in making new apparatus.

CHEMISTRY.

The several chemical laboratories are modern in design, commodious and well equipped. Each is supplied with the latest forms of apparatus required for its particular work. Besides

all necessary glass and porcelain ware, this includes water baths, drying ovens, combustion, muffle and assay furnaces, platinum dishes and crucibles, polariscope, spectroscope, balances, lantern and other lecture appliances, etc.

ZOOLOGY.

The zoological laboratory is well supplied with aquaria, microscopes, dissecting tools, charts, reference books and collections. The latter include a representative display of the birds of New Hampshire, and a very large collection of the insects of the state arranged in glass-covered boxes.

BOTANY.

The botanical laboratory is supplied with a good herbarium, charts, microscopes and the other necessary appliances.

SURVEYING.

The surveying instruments are sufficient in number and of the most approved pattern.

DRAWING.

One-half of the entire first floor in Thompson Hall is devoted to the use of the drawing and machine design department. For free-hand model-drawing and for mathematical drawing there is a good supply of geometric models; and for free-hand industrial drawing the nucleus of a good collection exists, consisting of plaster casts of historic ornament, details of human form and antique sculpture, as well as vases and common objects. There is an excellent collection of working models and machines for machine drawing and various machines in other departments are available for this work.

There is a good working library connected with this department, including reference books in mechanical and free-hand drawing and elementary and machine design.

MUSEUM.

The museum had for a nucleus the collection made during the state geological survey. To this additions have been made from various sources. Specimens are being collected to illustrate the zoology of New Hampshire, and New Hampshire collectors and naturalists are invited to make the museum the permanent depository for their collections.

LIBRARY.

In accordance with an act of consolidation between the libraries of Durham and the college, the books of the Durham Public Library and the college are all shelved in the new building. This consolidation makes an especially good collection, the scientific books of the college supplementing well the more popular books of the town library. The consolidated libraries number about 23,000 bound volumes and 7,000 pamphlets.

In the reading room are to be found the leading American and foreign periodicals, local papers and Boston and New York daily papers.

In the reference room are shelved about 2,000 bound volumes, which give good opportunity for reference and research work. There is also provision for the future in the second story rooms, which can be used for department libraries when the reference room proves inadequate.

Aside from the main library, each department has its department library of the more technical books and those which are of special use in the laboratories and work-shops.

MILITARY DEPARTMENT.

This department is in charge of an officer of the United States regular army, detailed by the war department, as professor of military science and tactics. Military instruction, which is required by law, is both theoretical and practical, the latter largely from September to December 1 and from April 1 to June, the former having special reference to the duties of the line.

The organization is a battalion of three companies with a band, officered by cadets selected for character, soldierly bearing and efficiency. The federal government has furnished Krag-Jorgensen magazine rifles, model 1898, and equipment for 200 men. Attention is paid to rifle practice, the government supplying ample ammunition and target materials, and the college a good range, within four minutes' walk of the college buildings, with firing points at 200, 300 and 500 yards. The rolling country in the vicinity of the college furnishes the best opportunities for extended order drill and field exercises, the athletic field for close order drills and the new gymnasium or drill shed gives ample room for indoor work.

The cadets wear, whenever on military duty, and may at other times, provided the complete uniforms are worn, cadet gray uniforms with black trouser stripes, black braid on cuffs and col-

lars of blouses and blue caps, army regulation. The letters N. H. C. are embroidered in gold on each side of blouse collar. The cost of such a uniform does not exceed $16 and the wearing of such does away with the necessity of purchasing a civilian suit for college use.

Service in this department is optional for members of the senior class; all other students, excepting those presenting surgeon's certificates of disability, are required to attend both drills and recitations. Seniors who elect drill and are appointed cadet officers have their college fees remitted.

Upon the graduation of each class, the names of such students as have shown special aptitude for military service are reported to the adjutant-general of the army and to the adjutant-general of the state. The names of the three most distinguished students in this department are inserted in the United States army register.

FOUR YEAR COURSES.

AGRICULTURAL COURSE.

This course is arranged especially for the general education and scientific training of students to fit them in various economic branches, such as agronomy, animal husbandry, dairying, biology, agricultural chemistry, entomology, forestry, horticulture, veterinary science, etc. Graduates are qualified to take positions as teachers and assistants in colleges and experiment stations, as farm superintendents, foremen, stock raisers, dairy farmers, creamery managers, dairymen, superintendents of estates, parks or cemeteries, fruit-growers, gardeners, florists, nurserymen, landscape gardeners, foresters, poultrymen, ranchmen, etc.

The aim is to give a broad general foundation of pure and applied science. Laboratory methods are used in connection with lecture and recitation work. Seminary courses are also given, especially for seniors and advanced students.

BIOLOGICAL DIVISION OF THE AGRICULTURAL COURSE.

The biological division of the agricultural course is for the benefit of those students who desire to make a special study of some phase of natural history. It leads to such positions as teachers of botany and zoology in high schools and colleges, entomologists for experiment stations, state inspectors of nursery grounds, etc. During the first two years the student pursues

the regular studies of the agricultural course, but in his junior year he begins to specialize in botany and zoology, a considerable proportion of his time during the rest of his course being given to these subjects. Students taking this course will elect, with the advice of the instructors in charge, six hours per week of biological work in the junior year and seven hours per week during the senior year, exclusive of thesis.

CHEMICAL DIVISION OF THE AGRICULTURAL COURSE.

The work of this division is especially intended to give a thorough grounding in the principles of chemistry as applied to agriculture and agricultural chemical analysis and to train the student thoroughly in all kinds of manipulation required of the chemist in experiment stations, large dairy establishments, fertilizer works, etc.

Instruction is given mainly by personal supervision in the laboratory, accompanied by lectures, themes, recitations; and, as in the course in technical chemistry, the studies are arranged to meet the needs of the individual. Students wishing to take this course will elect, with the advice of the instructors in charge, six hours per week of chemical work during the junior year, and seven hours per week during the senior year.

COURSE IN MECHANICAL ENGINEERING.

Mechanical engineering is concerned with the design, construction, care and operation of machinery.

The special studies are mathematical, including a large amount of drawing; technical, pertaining directly to the professional work of the engineer; and general.

The study of the scientific principles underlying the work of the engineer is accompanied throughout the course by actual practice in mechanical operations and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, chemical and physical laboratories.

ELECTRICAL ENGINEERING COURSE.

The electrical engineering course is intended to meet the demands of a young man fitting himself for practical and professional engineering, in connection with the various applications of electricity.

By means of lectures, recitations and laboratory work, the subjects of the course are brought to the attention of the stu-

dent in such a manner as to emphasize not only the present needs of the practitioner and engineer, but to give him the groundwork that will enable him to grasp and understand the constantly increasing number of problems that require solution.

The instruction aims to impart a complete practical and theoretical knowledge of the best modern types of electrical machines and appliances and the methods of designing, building and operating them.

The rapid progress in recent years in applying electricity to commercial uses, renders it difficult, if not impossible, for one without a technical education to gain prominence in the work and be intrusted with its more responsible positions.

COURSE IN CHEMICAL ENGINEERING.

This course is intended to fit for the career of a professional chemist or chemical engineer, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations and a large amount of carefully supervised laboratory work. The laboratory course is largely an individual one, and the work of each student is conducted with reference not only to the particular object he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given a thorough training in German and French to enable him to read with ease the chemical literature; a thorough grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special engineering work, both mechanical and electrical; and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference works and chemical periodicals which the library contains. Owing to the fact that the laboratories are becoming crowded the number of students taking this course is limited to six in each class. These six are chosen in the early part of the sophomore year from those who have applied. Fitness to become successful chemists will alone determine the choice made.

GENERAL COURSE.

The General Course is arranged for those who wish a broad general training based chiefly upon the study of science, modern languages and history. This course provides a liberal education with science as a leading element, and by means of the group

system of elective studies affords an opportunity for specialization.

COURSES FOR WOMEN.

Women attending the college may elect any course laid down in the curriculum, subject to the conditions prescribed for all students. They may omit manual labor on the farm and in the shop, and substitute other studies.

The general course, with its electives, is specially prepared for women, and is so planned that special courses may be arranged in literature, languages, history, philosophy, pedagogy, drawing, biology and manual training.

The courses in agriculture and chemistry afford opportunities for the study of the natural sciences, and the engineering courses offer exceptional advantages in mathematics and physics.

REQUIREMENTS FOR ADMISSION TO FOUR YEAR COURSES.

All candidates for admission to college must present satisfactory testimonials of good moral character.

Candidates for admission to the freshman class must offer studies amounting to a total of 14 units.

AGRICULTURAL COURSE.

Candidates for admission who intend to take the Agricultural Course must offer ten and one-half units from required subjects and three and one-half units from optional subjects, according to the following statement:

Required Group	A (English)	3	units
	B (American History or Ancient History)	1	unit
	C....(Algebra and Plane Geometry)	2½	units
	D.....(Physics and Biology)	2	units
	E.....(French or German)	2	units
		10½	units
	(Optional)	3½	units
Total		14	units

ENGINEERING COURSES.

Candidates for admission who intend to take the Engineering Courses must offer ten units from required subjects and four units from optional subjects, according to the following statement. Beginning with Sept. 1910, Plane Trigonometry will be added to the required subjects.

Required	Group A (English)	3	units
	B (American History or Ancient History)	1	unit
	C (Algebra, Plane and Solid Geomtry)	3	units
	D. (Physics)	1	unit
	E. (French or German)	2	units
		10	units
	(Optional)	4	units
Total		14	units

GENERAL COURSE.

Candidates for admission who intend to take the General Course must offer ten and one-half units from required subjects and three and one-half units from optional subjects, according to the following statement:

Required	Group A (English)	3	units
	B (American History and Ancient History)	2	units
	C. (Algebra and Plane Geometry)	2½	units
	D. (Physics)	1	unit
	E. (French or German)	2	units
		10½	units
	(Optional)	3½	units
Total		14	units

GROUP A, ENGLISH.

The New England College Entrance Requirements in reading and study or any course of equivalent value—four periods per week for four years. Emphasis should be placed upon the development of a clear, correct style on the part of the candidate rather than upon the critical analysis of literature.

FOR 1909-1911.

Required for Study and Practice.

Shakespeare: Macbeth. Milton: Lycidas, Comus, L'Allegro, and Il Penseroso. Burke: Speech on Conciliation with America; *or* Washington: Farewell Address, and Webster: First Bunker Hill Oration. Macaulay: Life of Johnson; *or* Carlyle: Essay on Burns.

Required for Reading.

Group 1 (two books to be selected). Shakespeare: As You Like It, Henry V, Julius Cæsar, The Merchant of Venice, Twelfth Night.

Group 2 (one book to be selected). Bacon: Essays. Bunyan: The Pilgrim's Progress, Part I. The Sir Roger de Coverley Papers in "The Spectator." Franklin: Autobiography.

Group 3 (one book to be selected). Chaucer: Prologue. Spenser: Selections from the Faerie Queen. Pope: The Rape of the Lock. Goldsmith: The Deserted Village. Palgrave: Golden Treasury (First Series), Books II and III, with especial attention to Dryden, Collins, Gray, Cowper, and Burns.

Group 4 (two books to be selected). Goldsmith: The Vicar of Wakefield. Scott: Ivanhoe, Quentin Durward. Hawthorne: The House of the Seven Gables. Thackeray: Henry Esmond. Gaskell: Cranford. Dickens: A Tale of Two Cities. George Eliot: Silas Marner. Blackmore: Lorna Doone.

Group 5 (two books to be selected). Irving: Sketch Book. Lamb: Essays of Elia. De Quincey: Joan of Arc and The English Mail-Coach. Carlyle: Heroes and Hero-Worship. Emerson: Essays (selected). Ruskin: Sesame and Lilies.

Group 6 (two books to be selected). Coleridge: The Ancient Mariner. Scott: The Lady of the Lake. Byron: Mazeppa and the Prisoner of Chillon. Palgrave: Golden Treasury (First Series), Book VI, with special attention to Wordsworth, Keats, and Shelley. Macaulay: Lays of Ancient Rome. Poe: Poems. Lowell: The Vision of Sir Launfal. Arnold: Sohrab and Rustum. Longfellow: The Courtship of Miles Standish. Tennyson: Gareth and Lynette, Lancelot and Elaine, and The Passing of Arthur. Browning: Cavalier Tunes, The Lost Leader, How They Brought the Good News from Ghent to Aix, Evelyn Hope, Home Thoughts from Abroad, Home Thoughts from the Sea, Incident of the French Camp, The Boy and the Angel, One Word More, Hervé Riel, Pheidippides.

GROUP B, HISTORY.

The work offered for each unit in History must consist of at least five exercises per week during one year of the high school course, except that in the case of American History four exercises per week will be accepted. For details of preparatory work in History, reference is made to "A History Syllabus for Secondary Schools, by the New England History Teachers' Association." Boston, D. C. Heath & Co., 1904.

American History and Civics.

The History requirements are covered by Channing's Students' History, Montgomery's Students' History or by Hart's Essentials, with the collateral work. The work in Civics must include at least a knowledge of the Constitution of the United States.

—1 unit.

Ancient History.

Wolfson's Essentials or an equivalent, with the collateral work, or, the History of Greece and the History of Rome as given in works like Myers' History of Greece, Morey's Outlines of Greek History, Allen's Roman People, Myers' Rome and Morey's Outlines of Roman History. The requirements are limited to Grecian History and Roman History to A. D. 476.

—1 unit.

English History.

The amount of English History required is represented by Gardiner's Students' History, by Larned's or Montgomery's History, or by Walker's Essentials, with the collateral work.

—1 unit.

Mediaeval and Modern History.

Harding's Essentials of Mediæval and Modern History with the collateral work, or Myers' Mediæval and Modern History, or an equivalent.

—1 unit.

GROUP C, MATHEMATICS.

Algebra.

Through quadratic equations, including radicals and fractional and negative exponents, binomial theorem and progressions,—five periods per week for one and one-half years.

—1½ units.

Plane Geometry.

The equivalent of Wells' presentation.

—1 unit.

Solid Geometry.

The equivalent of Wells' presentation.

—½ unit.

Plane Trigonometry.

The equivalent of Wells' presentation.

—½ unit.

GROUP D. SCIENCE.

Accompanying the certificates for each of the sciences the student MUST present at entrance a note-book containing records and drawings of his or her observations and experiments in the laboratory, which must bear the certificate of the teacher in charge that the work was done personally in the laboratory.

Physics.

The preparation required for entrance in Physics shall be an equivalent of five exercises a week for one year, of which at least two are devoted to laboratory work.

—1 unit.

Biology.

Students in the Agricultural Course must present either.

A. Zoology.

Kellogg's Elementary Zoology. Linville and Kelly's Text book in General Zoology. Jordan, Kellogg and Heath's Animals, Needham's Lessons in Zoology, Coulton's Zoology, or an approved equivalent, occupying at least four periods per week for a half year, of which at least one is devoted to laboratory work.

—½ unit.

and Botany.

Bergen's Elements of Botany, or an approved equivalent, occupying at least four periods per week for a half year, of which at least one is devoted to laboratory work.

—½ unit.

or

B. Botany.

Coulter's Text Book of Botany, Bergen's Foundations of Botany, or an approved equivalent, occupying at least four periods per week for one year, of which at least one is devoted to laboratory work.

—1 unit.

Geology.

Leconte's Compend or an approved equivalent.

—½ unit.

Chemistry.

Elementary Inorganic Chemistry equivalent to the work covered in Remsen's Briefer Course, Storer & Lindsay's Manual, Witham's Elements or Newell's Descriptive Chemistry, accompanied in each instance with laboratory practice.

—1 unit.

GROUP E, MODERN LANGUAGES.

French.

Two years are required for preparation in French. Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, (3) abundant translation of simple English prose into idiomatic French, (4) reading of from 100 to 175 pages of French prose, (5) writing French from dictation. Work of the second year should include (1) the reading of from 250 to 400 pages of easy modern prose, (2) constant practice in translating from English into French variations of the text read, (3) frequent paraphrases of the text read, (4) dictation.

—2 units.

German.

Two years are required for preparation in German. Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, such as the inflection of the articles, the common nouns, adjectives, pronouns and strong and weak verbs, upon the uses of the prepositions, the modal auxiliaries and the rules of syntax and word order, (3) writing from dictation, (4) the reading of from 75 to 100 pages of prose, (5) translation from English into German. Work of

the second year should include (1) the reading of from 150 to 200 pages of prose, (2) constant practice in translating from English into French variations of the text read, (3) dictation, (4) continued drill upon the rudiments of grammar, (5) frequent paraphrases of the text read.

—2 units.

GROUP F, ANCIENT LANGUAGES.

Students entering from approved schools may receive credit in their certificates for the following work in Latin or Greek.

Latin.

Grammar and four books of Cæsar. Two year's work.

—2 units.

Vergil, six books.
Cicero, six orations.

—2 units.

Greek.

Books I and II of Xenophon's Anabasis, Books III and IV of the Anabasis or their equivalent in other Attic prose, and 1,500 lines of Homer.

—2 units.

CERTIFICATES.

In place of examinations, certificates will be received from approved preparatory schools, including all that have been approved by the superintendent of public instruction in New Hampshire. Approval of a school will be withdrawn whenever it appears that the work of the school does not reach the standard required by the college. No certificate will be accepted from a private tutor or instructor.

Certificates should meet the requirements IN FULL; in case of exceptions the candidate will be examined on any requirement not covered by the certificate. If the certificate makes ANY exception in the case of a student who has not regularly graduated from an approved school, the certificate will not be accepted, and the student will be examined on all the requirements.

Certificates will be accepted for that work only which has been done in the certifying school, or which is necessarily involved in the work done there; work done in the grammar school must not be certified unless reviewed in the high school.

Certificates must be made out on a blank furnished by the college, and should be mailed to the dean at the close of the school year.

COMPLETE CERTIFICATES.

THE SIGNATURE OF THE PRINCIPAL IS TO BE AFFIXED TO THE GENERAL CERTIFICATE, AND TO THAT OF EACH DEPARTMENT IN WHICH THE WORK OF THE CANDIDATE IS CERTIFIED.

PARTIAL CERTIFICATES.

In case the work of a graduate has not been up to certificate grade in one or more subjects, the principal is requested to sign the general certificate, crossing out the words "and that in my judgment he is prepared to enter at once upon the work of the freshman year." He is also requested to fill out the group certificates in full *except signature*, the signature being attached only to such as indicate certificate grade.

Divided certificates from two or more schools will be accepted when the preparatory work has been done in more than one institution.

Certificate forms will be furnished upon application.

Candidates for advanced standing are also examined in the studies that have been pursued by the class which they propose to enter.

Examinations will be given, in the subjects presented for admission, beginning Friday of the week preceding the opening of the college year. Candidates will present themselves with their credentials on the first day of the examinations. See Calendar.

REQUIREMENTS FOR GRADUATION FROM FOUR YEAR COURSES.

Those who complete a four year course or its equivalent will be recommended for the degree of Bachelor of Science. No equivalent course will be accepted which does not comply with all the following requirements:

1. The completion of all work common to the four year courses.
2. The completion of one hundred fifty-four credit hours.
3. The completion of all but ten or less credit hours in some one of the regular four year courses.

4. Approval by the faculty not earlier than June 1 preceding the year of graduation.

The regular work of the senior class, including the regular final examinations, is completed at 4 p. m. on the Tuesday of the week preceding commencement; and each member of the class may receive a statement of his standing at the office of the registrar at 2 p. m. on the next day, Wednesday.

All work required for graduation must be completed by 6 p. m. of the Saturday of the same week.

THESIS.

A thesis upon some subject connected with the work of the course taken is required of every candidate for a degree. The subject together with a written approval of it by the head of the department within which it lies must be submitted to the president before the 15th day of December preceding graduation. The thesis shall be submitted to the head of the department concerned not later than the second Tuesday preceding commencement day. The thesis must be completed in typewritten and bound form and be in the hands of the department concerned before the Tuesday preceding commencement day. The thesis shall be typewritten or printed upon standard thesis paper eight and one-half by eleven inches, medium weight, neatly bound in black cloth and gilt-lettered on first cover with title, name of author, degree sought and year of graduation. This bound copy shall be filed and left with the college librarian.

FOUR YEAR COURSES.

DESCRIPTION OF STUDIES.

AGRONOMY.

PROF. TAYLOR, MR. EASTMAN.

1. Farm Equipment and Farm Crops.

Lectures and recitations upon the selection, planning and equipment of farms; fencing; drainage; farm wells; harvesting and tillage implements; silos and stable construction, etc. History, use and methods of culture of our various farm crops. Practical exercises in leveling and laying out of drains and in the preparation of farm and building plans. Judging and scoring the different varieties of grains and grasses. For Agricultural Juniors.

Three exercises per week. 1st S.

2. Soils and Soil Physics.

Lectures and recitations upon the formation, kinds and physical properties of soils; the movements and conservation of soil moisture; the relation of heat and air to soil; the nature and physical effects of tillage and fertilizers; laboratory work and experimentation with soils to show the physical effects of different conditions and texture. For Agricultural Juniors.

Three exercises per week. 2nd S.

3. Soil Management and Fertility.

An advanced course in soils for those who have shown a special aptitude in the preceding course. The processes of soil formation, the physics and chemistry of soils, soil classification and mapping and the principles of fertility will be discussed. The lecture work will be supplemented by laboratory and field experimentation. Elective for Agricultural Seniors.

Three exercises per week. 1st S.

4. Manures and Fertilizers. Prof. Morse.

A course of lectures, themes and abstracts on the subject of plant food and its sources. Elective for Agricultural Seniors.

Two exericses per week. 2nd S.

5. Agricultural Seminary. Prof. Taylor.

This course consists of library and reference work and a study of current agricultural literature. Each student will prepare during the term a certain number of abstracts, reports of papers upon topics relating to agriculture. For Agricultural Seniors.

Two exercises per week. 1st S.

6. Agricultural History and Economics. Prof. Taylor.

Lectures and recitations upon the history of agriculture from early Egyptian to modern American; present agricultural methods and systems in various countries; the principles of economics as applied to the organization, equipment and operation of the farm; tenancy and land ownership; practical problems in farm management. For Agricultural Seniors. First nine weeks.

Four exericses per week. 2nd S.

7. Farm Mechanics. Prof. Taylor.

Lectures and recitations upon the principles of construction of farm buildings; barns and silos; construction and maintenance of country roads; principles of draft; farm motors and machinery.

Practical work in testing and comparisons of various makes and kinds of farm machinery. For Agricultural Seniors. Last eight weeks.

Four exercises per week. 2nd S.

ANIMAL HUSBANDRY.

ASSOC. PROF. PEW, MR. MCNUTT.

1. Breeds of Livestock.

Lectures and recitations upon the origin, history, development, characteristics and adaptability of the different breeds of cattle, sheep, horses and swine. In the study of beef cattle, market conditions and requirements are considered. In the study of dairy cattle, milk and butter production are considered. In the study of sheep, mutton and wool requirements are considered, also the raising of early lambs.

In the study of horses, besides the origin, history and development of the breeds, market classifications are considered. In the study of swine, the influence of various feeds and of different methods of management as affecting types is considered. One afternoon each week is used for judging the different breeds. For Agricultural Sophomores.

Three exercises per week. 1st S.

2. Principles of Breeding.

Lectures and recitations upon the laws of heredity; value of selection in improving and maintaining a high standard of excellence in farm stock; variation, cause and extent; methods of breeding, including discussion of inbreeding, crossing and grading. Elective for Agricultural Seniors.

Two exercises per week. 2nd S.

3. Stock Feeding.

Lectures and recitations upon the laws of nutrition; composition and digestibility of feed stuffs; influence of feed on the animal body, preservation of coarse fodders; a study of leading cereals and by-products. Practice will be given in computing and compounding rations for various purposes. For Agricultural Juniors.

Three exercises per week. 2nd S.

4. Veterinary Science.

Lectures and recitations upon anatomy and physiology of the animal body; holding a post-mortem; simple farm medicines and

methods of administering; breeding and some of its effects; common farm operations; common infectious and contagious diseases affecting farm animals and methods of treatment. Elective for Agricultural Juniors.

Three exercises per week. 2nd S.

5. Poultry.

Lectures and recitations upon different classes and varieties of poultry; breeding and feeding; location and building of poultry houses; a study of incubators and brooders; methods of preventing disease. Practice will be given in scoring. Elective for Agricultural Seniors.

Two exercises per week. 2nd S.

6. Advanced Livestock.

This is a course laid out especially for those students who have shown proficiency in the previous courses having to do with Livestock. Special problems will be worked out as desired by the students concerning the breeds and their management; advanced live stock judging will also be given. Elective for Agricultural Juniors.

Three exercises per week. 2nd S.

7. Animal Mechanics.

Lectures and recitations upon the conformation, soundness and anatomy of the horse, the principles of mechanics involved as applied to the animal machine, proportions and conformation of horses for speed and draft; various gaits; practical exercises in measuring animals and testing value of given measurements for given purposes. Course to be given every other year beginning with 1905. Elective for Agricultural Seniors or Juniors.

Four exercises per week. 1st S.

BOTANY.

PROF. BROOKS, MR. LEWIS.

1. General Botany. Prof. Brooks, Mr. Lewis.

Lectures and laboratory work on the fundamental principles of plant physiology, followed by the study of a series of representative cryptogams. For Agricultural Sophomores, elective for General Course Sophomores.

Three exercises per week. 1st S.

2. **General Botany.** Prof. Brooks, Mr. Lewis.

This course continues the work on type forms begun in Course 1 and includes the study of vascular cryptogams, gymnosperms and angiosperms. The latter part of the semester will be devoted to a study of plant families and plant societies as represented in the local flora. Lectures, laboratory and field work. For Agricultural Sophomores, elective for General Course Sophomores.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

3. **Plant Pathology.** Prof. Brooks.

This course deals with the nature, cause and prevention of plant diseases and includes a systematic consideration of parasitic fungi. Lectures and laboratory work. Elective for Agricultural Juniors and General Course Juniors and Seniors.

Open only to students who have completed Course 2.

Four exercises per week. 1st S.

4. **Mycology.** Prof. Brooks.

A study of representative groups of fungi, including the bacteria; culture methods and pathological work with fungous diseases. Lectures, laboratory and field work. Elective for Agricultural Juniors and General Course Juniors and Seniors.

Open only to students who have completed Course 2.

Three exercises per week. 2nd S.

5. **Plant Physiology.** Prof. Brooks, Mr. Lewis.

Lectures and experimental work on absorption, nutrition, growth, respiration and irritability. Elective for Agricultural Juniors and General Course Juniors and Seniors.

Open only to students who have completed Course 2.

Three exercises per week. 2nd S.

6. **Plant Histology.** Mr. Lewis.

A minute study of plant cells and plant tissues, starches, aleurones and other cell contents; use of reagents and stains; cutting and mounting of sections. Lectures and laboratory work. Elective for General Course Juniors and Seniors and Agricultural Seniors.

Open only to students who have completed Course 2.

Three exercises per week. 1st S

7. 8. Advanced Botany. Prof. Brooks, Mr. Lewis.

Opportunity to do original work along special lines will be offered to students who have shown special ability in the preceding courses.

Three exercises per week throughout the year.

CHEMISTRY.

ORGANIC CHEMISTRY—PROF. MORSE.

INORGANIC CHEMISTRY—PROF. PARSONS,

ASST. PROF. JAMES, DR. RANDALL.

1. Inorganic Chemistry.

Lectures and recitations on general and theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solution of chemical problems will be required. For all Freshmen.

Three exercises per week. 1st S.

2. Inorganic Chemistry.

Course 2 is a continuation of Course 1, but the time will be mainly spent on the metallic elements, their metallurgy, salts, etc.

Open only to students who have completed Course 1.

Two exercises per week. 2nd S.

3. Elementary Physical Chemistry.

A short elementary course of ten lectures on the Dissociation Theory and its application; the Mass Law, etc. To accompany Courses 2 and 4.

Elective by special arrangement.

4. Qualitative Analysis.

Course 4 consists of laboratory practice, with occasional lectures. The student is expected to become proficient in the separation and detection of the common acids and bases and to keep a full set of notes. He will have practice in the writing of reactions and will fill out numerous slips containing questions bearing upon his work. For Chemical Freshman, Electrical and Mechanical Freshmen (Division 1), Agricultural Sophomores and Electrical and Mechanical Sophomores (Division 2); elective for General Course Sophomores and Juniors.

Open only to students who have completed Course 1.

Freshman Year. 2nd S.

Sophomore and Junior Years. 1st S.

Fifty-one exercises.

5. Qualitative Analysis.

A short advanced course for Chemical Sophomores on insoluble substances and the rarer elements, to precede Chemistry 10. First five weeks.

Twenty-five exercises. 1st S.

6. Organic Chemistry. Prof. Morse.

Lectures and recitations. A study of the chemistry of the carbon compounds. For Agricultural and Chemical Sophomores, elective for General Course Juniors.

Open only to students who have completed Chemistry 1 and 2.

Three exercises per week. 2nd S.

7. Chemistry of Plant and Animal Nutrition. Mr. Morse.

Lectures and recitations on the composition of plants, animals and foods. For Agricultural and Chemical Juniors, elective for General Course Seniors.

Open only to students who have completed Chemistry 6.

Two exercises per week. 1st S.

8. Organic Chemical Laboratory. Prof. Morse.

The course consists mainly of laboratory practice in preparing and purifying organic compounds and a study of qualitative organic reactions and analyses. Lectures and recitations will be held from time to time in connection with the practice. For Chemical Juniors, elective for General Course Juniors.

Three exercises per week. 1st S.

10. Quantitative Analysis.

A preliminary course in quantitative analysis to familiarize the student with the general methods of chemical manipulation and analysis. For Chemical Sophomores. Elective in the General Course in Sophomore, Junior and Senior Years, provided laboratory facilities permit. Last twelve weeks.

Open only to students who have completed Chemistry 4.

Five exercises per week. 1st S.

11. Quantitative Analysis.

A continuation of Course 10. For Chemical Sophomores.

Six exercises per week. 2nd S.

12. Advanced Quantitative Analysis.

Course 12 is arranged for students of the Chemical Courses, and is intended to fit them for work in the laboratories of agri-

cultural experiment stations, fertilizer works, iron works, sugar refineries, etc., and for the duties of the public analyst. This course will be made to fit the end which each has in view, and will be largely an individual one. For those students desiring to specialize in agricultural and food chemistry the analysis made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, foodstuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron and steel and other metals, ores, limestones, slags, alloys, fuels, etc. As a preparation for the study of medicine, work will be done on poisons, foods, drugs, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short course in gas and oil analysis will also be provided. For Chemical Juniors.

Open only to students who have completed Course 11.

Five exercises per week. 1st S.

13. **Advanced Quantitative Analysis.**

A continuation of Course 12. For Chemical Juniors.

Four exercises per week. 2nd S.

14. **Industrial Chemistry.**

Course 14 consists of lectures on chemical manufactures, such as sugar, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views, and trips to the leading New England cities to examine important chemical manufactures will be taken as far as practicable. For Chemical Juniors and Seniors.

Open only to students who have completed Courses 1 and 2.

Two exercises per week. 2nd S.

15. **Metallurgy.**

Course 15 consists of lectures describing the processes employed in the smelting of ores of iron, lead, copper, zinc, silver, gold, etc., and upon the methods used in refining these metals. The lectures are illustrated by stereopticon and by specimens of metallurgical products. For Chemical Juniors or Seniors.

Open only to students who have completed Courses 1 and 2.

One exercise per week. 2nd S.

Courses 14 and 15 are given in alternate years with Course 22.

16. Assaying.

A course in the fire assay of gold and silver ores. For Chemical Seniors.

Open only to students who have taken Courses 10 or 18.

Seventeen exercises. 1st S.

17. Agricultural Analysis.

This course is arranged especially for students of the agricultural course, and consists mainly of the quantitative determination of the constituents of milk, butter, fertilizers, grain, etc. Elective, subject to desk room in laboratory.

Open only to students who have completed creditably the work of Courses 1, 2, and 4.

Three exercises per week.

18. Metallurgical Analysis.

This course is arranged for the students of the engineering departments who may elect the same, and consists mainly of the quantitative determination of ores, slags, metals, alloys, fuels, etc. Elective, subject to desk room in the laboratory.

Open only to students who have completed creditably the work of Courses 1, 2, and 4 or 5.

Three exercises per week.

19. Chemical Journals, Methods, etc.

The work consists of the study of current chemical literature, mainly in the German language, with recitations twice a week. Each student will be expected to prepare abstracts, reports, criticisms, etc., upon assigned articles. For Chemical Juniors.

Open to students who have begun Course 11.

Two exercises per week. 1st S.

20. Chemical Journals.

A continuation of Course 19. For Chemical Juniors.

Two exercises per week. 2nd S.

21. Physical Chemistry, Lectures.

The work consists of advanced study of chemical theory. Practical experiments will be performed, with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, ionization, electrolysis, molecular and atomic volume, thermo chemistry, equilibrium, the phase rule, etc., will take up

much of the time. For Chemical Juniors and Seniors. Course 21 comes in alternate years.

Open only to students who have completed Courses 1, 2 and 10.

Two exercises per week. 1st S.

22. Physical and Electro Chemistry, Lectures.

A continuation of Course 21, and is given in alternate years with Courses 14 and 15. For Chemical Juniors or Seniors.

Three exercises per week. 2nd S.

23. Chemical Research.

Especially arranged for students of the chemical engineering course. May merge at any time into 24 and will usually do so about the middle of the first semester. For Chemical Seniors.

Eight exercises per week. 1st S.

24. Thesis.

The work of the last semester of the chemical engineering course is given up to the special study of some selected subject in any branch of chemical science and the student is required to present a thesis showing him to be capable of independence of thought and manipulation. For Chemical Seniors.

Eight exercises per week. 2nd S.

DAIRYING.

ASSOC. PROF. RASMUSSEN.

1. Farm Dairying.

Lectures and recitations on the Babcock test, tests for determining acidity in milk and on the use of the lactometer in detecting adulterations in milk. Includes also a study of the composition of milk, separation and churning. The laboratory work will be made applicable to farm conditions. For Agricultural Juniors.

Four exercises per week. 1st S.

2. Advanced Butter Making.

A study of the secretion, chemical and physical properties of milk, pasteurization, cream ripening, commercial starters, churning, marketing and scoring of butter. The laboratory work will be made applicable to factory conditions.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

3. **Technology of Milk.**

Consists of a study of the uses of milk and its by-products outside the scope of butter and cheese making; the production and preparation of sanitary, certified, modified milk; the making of condensed milk and koumiss; the manufacture of casein and milk sugar, and the preparation of ices and ice cream. Elective for Agricultural Juniors and Seniors.

Open only to students who have completed Course 1.

Two exercises per week. 2nd S.

4. **Factory Management.**

This course is designed for students wishing to fit themselves for managers of large factories and other dairy establishments. It consists of a study of the organization, location, construction, and operation of factories; special problems connected with the manufacturing of butter; dairy conditions and methods in foreign countries.

Open only to students who have completed Course 2.

Three exercises per week. 1st S.

5. **Dairy Bacteriology and Cheese Making.**

Lectures and demonstrations on the function of bacteria and the application of bacteriological principles to dairy work.

A course of lectures will be given covering the details of the manufacturing, curing and marketing of the more important kinds of cheese.

Open only to students who have completed Course 1.

Two exercises per week. 2nd S.

6. **Dairy Research.**

A study of the work of the experiment stations and other dairy literature. Elective for Agricultural Seniors.

Open only to students who have completed Courses 1, 2 or 3.

Two exercises per week. 1st S.

DRAWING.

PROF. PUTNAM, MR. LATON.

These courses are of an industrial nature and include both freehand and mathematical branches of this subject.

1. **Industrial Drawing.** Prof. Putnam, Mr. Laton.

Free-hand lettering, free-hand drawing, use of instruments, mathematical drawing, inking, tinting, tracing and blue-prints.

Systems of object drawing; orthographic projection; isometric drawing; mechanical perspective, shades and shadows. For Ag-

ricultural and Engineering Freshmen, elective for General Course Freshmen.

Agricultural and General Course Freshmen.

Two exercises per week. 1st S.

Engineering Freshmen.

Two and one-half exercises per week. 1st S.

NOTE.—Alternating with shop-work on Wednesdays.

2. **Descriptive Geometry.** Prof. Putnam, Mr. Laton.

Recitations and drawing exercises in the solution of geometrical problems by orthographic projection.

For Engineering Freshmen. (Divisions 1 and 2.)

Division 1, whole semester.

Three exercises per week. 2nd S.

Division 2, first ten weeks.

Two exercises per week. 2nd S.

3. **Descriptive Geometry.** Prof. Putnam, Mr. Laton.

Continuation of 2. Practical problems on bridge beams, rafters, piping, etc.

For Engineering Freshmen (Division 2). Last seven weeks.

Two exercises per week. 2nd S.

4. **Design of Farm Buildings.** Prof. Putnam.

This course consists of drawings of floor plans and framing details for farm buildings in preparation for the Rural Architectural Course of the Senior Year. For Agricultural Freshmen.

Two exercises per week. 2nd S.

5. **Descriptive Geometry.** Prof. Putnam, Mr. Laton.

Same as Course 3. For Electrical and Mechanical Sophomores (Division 1). First seven weeks.

Two and one-half exercises per week. 1st S.

6. **Elementary Machine Drawing.** Mr. Laton.

Mechanism drawing; detail and assembly drawing of simple machines. For Electrical and Mechanical Sophomores.

Division 1, last ten weeks.

Two exercises per week. 1st S.

Division 2, whole semester.

Two exercises per week. 1st S.

7. Elementary Machine Drawing and Free Hand Drawing of Chemical Apparatus. Mr. Laton.

For Chemical Sophomores.

Two exercises per week. 1st S.

8. Machine Drawing. Mr. Laton.

Working drawings of various machines and machine tools including steam boiler and engine details. For Electrical and Mechanical Sophomores.

Two and one-half exercises per week. 2nd S.

NOTE.—Alternating with shop-work on Wednesdays.

9. Free-Hand Drawing. Prof. Putnam.

Light and shade drawing from casts and still life. Charcoal work. Elective for General Course Sophomores.

Two exercises per week. 1st S.

10. Free-Hand Drawing.

Wash drawings and water color work; pencil sketching from nature and exercises in perspective. Elective for General Course Sophomores.

Two exercises per week. 2nd S.

11. Architectural Drawing.

Studies of architectural detail and historic ornament. Elective for General Course Juniors.

Three exercises per week. 1st S.

12. Architectural Drawing.

Continuation of 11. The design of a building with details of ornament. Elective for General Course Juniors.

Three exercises per week. 2nd S.

13. Advanced Architectural Drawing.

Elective for General Course Seniors.

Open only to students who have completed Courses 11 and 12.

Three exercises per week. 1st S.

14. Advanced Architectural Drawing.

Elective for General Course Seniors.

Open only to students who have completed Courses 11, 12 and 13.

Two exercises per week. 2nd S.

16. Free-hand or Charcoal Drawing.

Elective for General Course Freshmen. Last seven weeks.

Four exercises per week. 2nd S.

ELECTRICAL ENGINEERING.

PROF. HEWITT, ASST. PROF. BUCK.

1. Dynamo Electric Machinery.

The course begins with a general study of both direct and alternating current dynamos and motors, including elementary theory, with a large number of practical problems to illustrate application of same. For Electrical and Mechanical Juniors.

Open only to students who have completed Physics 2 and Mathematics 6.

Three exercises per week. 1st S.

2. Dynamo Electric Machinery.

This course is a continuation of Course 1. It takes up the theory of armature winding and construction; the general points of design; a study of various types of electrical machinery; laboratory methods of measurements, the various electrical quantities such as electric motive force, current, resistance, permeability of iron, the use of standard instruments; the laws of electrolysis; thermo-electric currents, etc. For Electrical and Mechanical Juniors.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

4. Electrical Laboratory.

This course consists of the measurement of resistances, inductances, the calibration of a ballistic galvanometer and Ryan electrometer, the permeabilities of samples of iron. Tests are made to determine the characteristic curves, efficiency curves, etc. The determination of the candle power of incandescent and arc lamps, the calibration of resistances, the measurement of power in alternating current circuits, alternator characteristics, the testing of synchro-

nous and polyphase motors, transformers, power measurements by wattmeters and a general study of polyphase machinery constitute the remainder of the course. For Electrical Juniors.

Open only to students who have completed Course 1.

Two exercises per week. 2nd S.

6. Telegraph and Telephone.

This course consists in a careful study of the elementary electrical principles of telegraphy; the construction and connection of lines, repeaters; high speed telegraphy; simple and multiplex telegraphy; submarine signalling; automatic devices, general electric signalling for purposes of alarms, railroads, etc., and wireless telegraphy; also a course of lectures and recitations on the acoustic and electrical principles of telephony; the different forms of calling and receiving apparatus and accessories and simple circuits. The last part of the course is devoted to the consideration of the more complex forms of circuits, exchange switchboards, transfer systems and the construction of overhead and underground systems. For Electrical Juniors.

One exercise per week. 2nd S.

11. Electrical Engineering Practice.

This course takes up the study of the properties of periodic curves; the effects of self-induction and capacity and a more detailed study of dynamos, motors, transformers and other electrical apparatus. For Electrical Seniors.

Open only to students who have completed Course 2.

Three exercises per week. 1st S.

12. Electrical Engineering Practice.

This course is a continuation and completion of Course 11. It takes up more advanced theory and general practice. It also includes a thorough study of High Tension Power Transmission and deals with the selection of apparatus for generating stations and the distributing systems. A study will be made of the proper combinations of apparatus to correctly represent standard theory and practice. The design of the transmission line and of the distributing systems will be considered. The application of the theory will be brought out in lectures and established with a large number of practical problems. A careful study will be

given to the various methods used for lightning protection. For Electrical Seniors.

Open only to students who have completed Course 11.

Four exercises per week. 2nd S.

13. Electric Railways. B

In this course will be considered the principles which govern the application of electric motors to railway service, and the location of power and sub-stations as determined by economic questions. Following this will be given the practical points involved in the selection and operation of railway equipment including power and sub-station equipment, line and track, railway motors and car equipment, storage batteries, etc. The problem of utilizing electric energy in mining will also be considered. For Electrical Seniors.

Open only to students who have completed Course 2.

Two exercises per week. 1st S.

15. Electrical Laboratory. M + B

This course is a continuation of Course 4 covering a more advanced series of experiments. A written report will be required for which one additional credit hour will be given. For Electrical Seniors.

Open only to students who have completed Course 4.

Four exercises per week. 1st S.

16. Electrical Laboratory. M + B

This course is a continuation of Course 15 and takes up experiments of a more advanced nature. A written report will be required for which one additional credit hour will be given. For Electrical Seniors.

Open only to students who have completed Course 15.

Three exercises per week. 2nd S.

17. Electrical Laboratory. M + B

This course is similar to Course 4 only a specially arranged series of experiments is provided adapted to the needs of students in the Mechanical Engineering Course. ~~A written report will be required for which one additional credit hour will be given.~~ For Mechanical ~~Seniors.~~ Juniors

Open only to students who have completed Course 2.

~~Two~~ exercises per week. 2st S.

18. Thesis.

A deposit of fifteen dollars to cover any damage done to instruments or apparatus, etc., is required in this course. Any unexpended balance is refunded at the close of the college year. Where apparatus is constructed as a part of a thesis, it shall remain the property of the department. For Electrical Seniors.

Three exercises per week. 2nd S.

19. Dynamo Electric Machinery.

This course is a continuation of Course 2, but arranged to meet the requirements of students in Mechanical Engineering. This course is not as advanced as Course 11, but covers the same subjects in a more elementary manner. For Mechanical Seniors.

Open only to students who have completed Course 2.

Three exercises per week. 1st S.

20. Dynamo Electric Machinery.

This course is a completion of Course 19. For Mechanical Seniors.

Open only to students who have completed Course 19.

Two exercises per week. 2nd S.

21. Industrial Electricity.

This course consists of a careful study of the principles and methods employed in electrical measurements, such as resistance of wire and batteries, e. m. f. of cells, current measurement by ammeters and electrolysis, the use of electrical measuring instruments and a series of laboratory experiments specially arranged to meet the requirements of Chemical Engineers. A brief study will be made of the dynamo, motor, transformer, primary and secondary batteries, arc and incandescent lamps and the general principles of electrical distribution. Experiments in electrolysis, electrical furnaces, reduction of metals, etc. are provided. For Chemical Seniors.

Three exercises per week. 1st S.

22. Industrial Electricity.

This course is a continuation of Course 21, but more advanced in nature. For Chemical Seniors.

Open only to students who have completed Course 21.

Three exercises per week. 2nd S.

ENGLISH.

PROF. GROVES, MR. SPENCER.

1. **English Composition and Rhetoric.** Mr. Spencer.

The theory of composition, theme writing, book reviews and an introduction to the principles of literary criticism. For all Freshmen.

Three exercises per week. 1st S.

2. **English Composition and Rhetoric.** Mr. Spencer.

This is a continuation of Course 1.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

3. **Advanced English Composition and Criticism.** Mr. Spencer.

(a) Composition. The four forms of composition (narration, description, exposition and argumentation) will be taken up and practice given in each form. There will also be daily and weekly themes based on topics of the day, (editorials), and on required readings. (Gardner's Forms of Prose Literature.)

(b) Criticism. The history of criticism will be studied briefly, each student having one novel and one poet to criticise. (Winchester's Principles of Literary Criticism). Elective for General Course Sophomores and Juniors.

Three exercises per week. 1st S.

4. **The English Drama.** Mr. Spencer.

Lectures on the English drama, with required readings in Shakespeare, Sheridan and Goldsmith. There will also be recitations and discussions. Elective for General Course Juniors and Seniors.

Three exercises per week. 2nd S.

5. **The English Novel.** Prof. Groves.

A seminar study of the development of the English novel. Elective for General Course Juniors and Seniors after consultation with the instructor.

Three exercises per week. 1st S.

6. **English Literature.** Prof. Groves.

The historical development of English literature. This course is designed to set forth the philosophy of literature and the

relation of writers to their predecessors and contemporaries. Text books, lectures and readings. For Agricultural and Chemical Seniors and General Course Sophomores or Juniors.

Three exercises per week. 2nd S.

7. American Literature. Prof. Scott.

Lectures with an extensive course of reading. Elective for General Course and Agricultural Seniors.

Four exercises per week. 2nd S.

FORESTRY.

PROF. PICKETT.

1. Principles of Forestry.

This course is intended to give the student a knowledge of the various methods of forestry management in Europe and America. The text and lectures will cover the use of trees for shelter, shade and ornament, and their propagation; the value of trees for timber; how to improve existing woodlands; the influence of forests upon soils, crops and climate; the establishment and management of plantations and forest trees. For Agricultural Juniors.

Three exercises per week. 1st S.

2. Forest Technology.

This course aims to give the student advanced theoretical and practical work in establishing, improving and managing woodlands; in estimating and measuring standing timber and harvesting forest products; forest administration, laws and working plans. Seminary and laboratory work. Elective for Agricultural Seniors who have shown special ability in Course 1.

Three exercises per week. 1st S.

3. Systematic Arboriculture.

A study of the botanical and physical characters of forest trees and shrubs. Special stress is laid on the value of various trees for lumber, fuel, posts, etc. Rapidity of growth, denseness and strength of fiber, etc. are features given particular attention. Elective for Agricultural Juniors who wish to specialize in Forestry.

Three exercises per week. 1st S.

4. **Forest Nursery Management.**

A study of the methods of propagation and care of trees, shrubs, and perennial plants in the nursery. This course will be the same as Horticulture 10 except that students specializing in forestry will be given forest trees and shrubs for laboratory work instead of fruit and ornamental plants. Elective for Agricultural Juniors who wish to specialize in Forestry.

Three exercises per week. 2nd S

FRENCH.

PROF. WHORISKEY, MR. SPENCER.

1. **Elementary French.** Mr. Spencer.

Essentials of French grammar and reading, with practice in speaking and writing French. Dictation. For Freshmen offering German for admission.

Three exercises per week. 1st S.

2. **Elementary French.** Mr. Spencer.

Continuation of Course 1. Reading of Modern French Prose; translation from English into French of connected narrative. Dictation. For Freshmen offering German for admission.

Three exercises per week. 2nd S.

3. **French Prose.** Prof. Whoriskey.

Reading and translation of French Prose, Composition, Poems. Elective for General Course Juniors.

Three exercises per week. 1st S.

4. **French Prose, History and Travel.** Prof. Whoriskey.

Reading and Translation, Composition based on some book read in class. Elective for General Course Juniors.

Three exercises per week. 2nd S.

*5. **French Prose of Nineteenth Century.** Prof. Whoriskey.

Selections from Hugo, Balzac, Sand, Dumas père, Daudet will be read. Sight reading. Elective for General Course Seniors.

Three exercises per week. 1st S.

*6. **French Prose of Nineteenth Century.** Prof. Whoriskey.

Continuation of Course 5. Elective for General Course Seniors.

Three exercises per week. 2nd S.

*7. **French Literature in the Seventeenth Century.** Prof. Whoriskey.

Corneille, Racine, Molière, Bossuet, Mme. de Sévigné, La Fontaine. Elective for General Course Seniors.

Three exercises per week. 1st S.

*8. **French Literature in the Seventeenth Century.** Prof. Whoriskey.

Continuation of Course 7. Elective for General Course Seniors.

Three exercises per week. 2nd S.

9. **French Composition.** Prof. Whoriskey.

Elective for General Course Seniors.

One and one-half exercises per week. 1st S.

10. **French Composition.** Prof. Whoriskey.

Elective for General Course Seniors.

One and one-half exercises per week. 2nd S.

GEOLOGY.

PROF. PARSONS, MR. BARROWS.

1. **Mineralogy.** Prof. Parsons.

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value. For Chemical Juniors, elective for Agricultural and General Course Juniors.

Open only to students who have completed Chemistry 1 and 2.

Two exercises per week. 2nd S.

2. **Elementary Geology.** Mr. Barrows.

A brief course in the elements of geology. Special attention is given to local geology and excursions are made to various points of interest in the vicinity. For Agricultural Juniors, elective for General Course Juniors and Seniors.

Open only to students who have completed Zoology 5.

Three exercises per week. 2nd S.

3. **Historical Geology.** Mr. Barrows.

The development of the continents of the earth and the evolution and distribution of the animal and plant forms from the

*Courses 5 and 6 are to be given in 1908-1909 and then in alternate years with 7 and 8.

earliest times to the present. Recitations, lectures and laboratory work. Elective for Agricultural and General Course Seniors.

Three exercises per week. 1st S.

GERMAN.

PROF. WHORISKEY, MR. SPENCER.

1. **Elementary German.** Prof. Whoriskey.

German Grammar. Declension of articles, nouns, adjectives and pronouns; verbs, weak and strong. Reading of simple stories; conversation. Dictation. For Freshmen offering French for admission.

Three exercises per week. 1st S.

2. **Elementary German.** Prof. Whoriskey.

Continuation of Course 1. Verbs, modal auxiliaries, essentials of syntax. Composition, Reading and Translation; Poems. Dictation. For Freshmen offering French for admission.

Three exercises per week. 2nd S.

3. **German Prose of the Nineteenth Century.** Prof. Whoriskey. Mr. Spencer.

Reading and Translation. Composition based on some book read in class. For all Sophomores.

Three exercises per week. 1st S.

4. **Scientific German.** Prof. Whoriskey, Mr. Spencer.

Reading and Translation. Composition. For all Sophomores.

Three exercises per week. 2nd S.

*5. **Goethe.** Prof. Whoriskey.

His Life and Works. Elective for General Course Seniors.

Three exercises per week. 1st S.

*6. **Goethe.** Prof. Whoriskey.

Continuation of Course 5. Elective for General Course Seniors.

Three exercises per week. 2nd S.

*7. **Schiller.** Prof. Whoriskey.

Life and Works. Elective for General Course Seniors.

Three exercises per week. 1st S.

*8. **Schiller.**

Continuation of Course 7. Elective for General Course Seniors.

Three exercises per week. 2nd S.

9. **German Composition.** Prof. Whoriskey.

One and one-half exercises per week. 1st S.

10. **German Composition.** Prof Whoriskey.

One and one-half exercises per week. 2nd S.

HISTORY.

PROF. SCOTT.

In the courses in History an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written.

Courses 1 and 2 and Courses 3 and 4 are given in alternate years. Courses 3 and 4 are offered in 1909—'10.

Courses 1 to 4 are open only to students who have passed in Ancient History.

Courses 5 to 7 are open only to students who have passed in History and Constitution of the United States.

1. **History of Europe from 476 to 1492.**

Recitations and collateral reading. For General Course Freshmen, elective for General Course Sophomores.

Three exercises per week. 1st S.

2. **History of Europe from 1492 to 1715.**

Recitations and collateral reading. For General Course Freshmen, elective for General Course Sophomores.

Three exercises per week. 2nd S.

3. **History of Europe from 1715 to 1815. The French Revolution.**

Recitations and collateral reading. For General Course Freshmen, elective for General Course Sophomores.

Three exercises per week. 1st S.

* Courses 7 and 8 are to be given in 1908-09 and then in alternate years with 6 and 7.

4. **History of Europe since 1815.**

Recitations and collateral reading. For General Course Freshmen, elective for General Course Sophomores.

Three exercises per week. 2nd S.

5. American History to 1783.

For Agricultural Seniors, elective for General Course Juniors.

Three exercises per week. 1st S.

6. **Political and Constitutional History of the United States from 1783 to 1837.**

For Agricultural Seniors, elective for General Course Juniors.

Three exercises per week. 2nd S.

7. **Political and Constitutional History of the United States since 1837.**

Elective for General Course Seniors.

Three exercises per week. 1st S.

HORTICULTURE.

PROF. PICKETT, MR. WICKS, MR. LUMSDEN.

With the rapid development of agricultural education, the science of horticulture has become more clearly defined. Horticulture is sub-divided into five classes, viz: (1) Pomology, or fruit growing; (2) Olericulture, or Vegetable Gardening; (3) Floriculture, or Flower Growing; (4) Landscape Gardening; and (5) Nursery Practice.

1. **Principles of Horticulture.** Prof. Pickett.

This course is elementary, and comprises the fundamentals of horticulture, emphasizing the sciences upon which horticulture rests and the scope and importance of its field. For Agricultural Freshmen. First eight weeks.

Three exercises per week. 1st S.

2. **Olericulture.**

Lectures and recitations upon the culture, classification and identification of vegetables. The storing and marketing of vegetables are also considered. For Agricultural Freshmen.

Open only to those who have completed Course 1.

Two exercises per week. 2nd S.

3. Practical Pomology. Mr. Wicks.

Dealing with problems of fruit growing such as location, choice of site, kind and adaptability of soil for fruit growing, soil management, planting of orchards, pruning, sprays and spraying, thinning, harvesting and marketing. Lectures and laboratory work. For Agricultural Sophomores.

Three exercises per week. 2nd S.

4. Greenhouse Construction and Management. Mr. Lumsden.

Lectures, recitations and laboratory work. This course aims to familiarize the student with modern methods of greenhouse work and the more important plants grown under glass. Soils, varieties, culture, marketing, enemies, etc., are studied. Each student is required to do practical work in propagating, potting, watering, ventilating, etc. A study is made of the history and development of different types of greenhouses, including methods of heating and general management. For Agricultural Juniors.

Two exercises per week. 1st S.

5. Landscape Gardening. Mr. Lumsden.

An elementary course in ornamental and landscape gardening with special reference to the beautifying of home surroundings. Elective for Agricultural Juniors.

Two exercises per week. 2nd S.

6. Vegetable Gardening under Glass. Mr. Lumsden.

A study of the methods of growing market vegetables in greenhouses. Lectures and practical exercises in the greenhouse. Elective for Agricultural Seniors.

Two exercises per week. 2nd S.

7. Nursery Management. Prof. Pickett.

A study of the methods of propagation and care of trees, shrubs and perennial plants in the nursery. Lectures, reference readings and practice. Elective for Agricultural Juniors.

Three exercises per week. 2nd S.

8. Small Fruit Culture. Mr. Wicks.

A comprehensive study of the small fruits such as the strawberry, raspberry, blackberry, currant and gooseberry. Each kind of fruit is studied with reference to all the essential points such

as history, classification, propagation, planting, pruning, enemies, diseases, picking and marketing. Elective for Agricultural Juniors.

Two exercises per week. 1st S.

9. **Commercial Floriculture.** Mr. Lumsden.

A study of the growing of cut flowers and decorative plants. Lectures and practical exercises in the greenhouse. Elective for Agricultural Seniors.

Three exercises per week. 1st S.

10. **Evolution and Improvement of Plants.** Prof. Pickett.

The application of the principles of evolution to the improvement of plants. Variation, selection and heredity as applied to the problems of plant breeding in agricultural practice. Elective for Agricultural Seniors.

Two exercises per week. 2nd S.

11. **Commercial Orcharding and Systematic Pomology.** Mr. Wicks.

This course deals with problems of marketing fruits, packing, transportation, storage, market requirements and formation of fruitgrowers' associations and handling of by-products. Lectures and reference reading. Elective for Agricultural Seniors.

Four exercises per week. 1st S.

12. **Advanced Landscape Gardening.** Mr. Lumsden.

A study of the principles and composition of landscape gardening as applied to public and private grounds. Lectures, reference readings, and plans. Elective for Agricultural Seniors.

Open only to students who have completed Course 7.

Two exercises per week. 2nd S.

13. **Advanced Vegetable Gardening.**

The management of commercial vegetable gardening establishments; rotation of crops, manures, markets and special crops. Elective for Agricultural Seniors.

Two exercises per week. 2nd S.

MACHINE DESIGN.

PROF. PUTNAM, MR. LATON, MR. INGHAM.

1. Mechanism. Prof. Putnam.

The study of machine parts with respect to their forms, motions and modes of connection; the kinematics of fluids; the theory of the slide valve. For Electrical and Mechanical Sophomores.

Open only to students who have completed Mathematics 1—2.

Three exercises per week. 1st S.

2. Mechanism. Prof. Putnam.

Continuation of Course 1. For Electrical and Mechanical Sophomores. First ten weeks.

Three exercises per week. 2nd S.

3. Theoretical Mechanics. Prof. Putnam, Mr. Ingham.

Composition and resolution of forces, conditions of equilibrium, center of gravity, with special attention to plane surfaces, friction, the simple machines, laws of motion, motion in a resisting medium, constrained motion, impact, work and energy, moment of inertia, particularly of plane surfaces; also strength of materials. For Engineering Juniors.

Open only to students who have completed Mathematics 1—7 inclusive and Physics 1.

Four exercises per week. 1st S.

4. Designing and Drawing. Prof. Putnam.

The application of Course 3 to practical problems worked out in the drafting room. For Electrical and Mechanical Juniors.

Open only to students who have completed Mathematics 1—7 inclusive and Physics 1.

Four exercises per week. 1st S.

5. Theoretical Mechanics. Prof. Putnam, Mr. Ingham.

Continuation of Course 3. For Engineering Juniors.

Four exercises per week. 2nd S.

6. Shop Machinery. Prof. Putnam, Mr. Laton.

The design of shop machinery of all kinds, except power plant machinery. For Mechanical Juniors.

Three exercises per week. 2nd S.

MATHEMATICS.

PROF. PETTEE, MR. LATON.

1. **Algebra Completed.** Prof. Pettee, Mr. Laton.

For all Freshmen.

Four exercises per week. 1st S.

2. **Solid Geometry, with advanced course.** Mr. Laton.

For Engineering Freshmen entering without the subject, elective for Agricultural and General Course Freshmen.

Two exercises per week. 1st S.

3. **Plane and Spherical Trigonometry.** Prof. Pettee, Mr. Laton.

For all Freshmen. First ten weeks.

Four exercises per week. 2nd S.

4. **Surveying.** Prof. Pettee.

Recitations, field-work and plotting, including compass, transit, plane-table and level work. For Engineering and Agricultural Freshmen, elective for General Course Freshmen. Last seven weeks.

Four exercises per week. 2nd S.

5. **Analytical Geometry.** Prof. Pettee.

For Engineering Sophomores, elective for General Course Sophomores.

Five exercises per week. 1st S.

6. **Differential and Integral Calculus.** Prof. Pettee.

For Engineering Sophomores, elective for General Course Sophomores.

Five exercises per week. 2nd S.

7. **Differential Equations.** Prof. Pettee.

Elective for General Course Juniors.

Two exercises per week. 1st S.

8. **Quaternions.** Prof. Pettee.

Elective for General Course Juniors.

Two exercises per week. 2nd S.

9. Astronomy. Prof. Pettee.

Elective for General Course Juniors and Seniors.

Two exercises per week. 2nd S.

MECHANICAL ENGINEERING.

PROF. CARDULLO, PROF. HEWITT, PROF. PUTNAM.

1. Elements of Steam Engineering. Prof. Cardullo.

Descriptive course of boilers, furnaces, steam engines and turbines, steam power appliances and gas engines. For Electrical and Mechanical Sophomores. Last seven weeks.

Three exercises per week. 2nd S.

7. Thermodynamics. Prof. Cardullo.

Study of the thermodynamic properties of gases and vapors, and of the phenomena of operation of thermodynamic engines; analysis of the causes of energy losses and methods of minimization; interpretation of indicator and temperature-entropy diagrams; study of steam engines and turbines, boilers, gas engines and producers and refrigerating machinery. For Electrical and Mechanical Juniors and Chemical Seniors.

Open only to students who have completed Physics 1 and 2 and Mathematics 1 to 6.

Three exercises per week. 1st S.

8. Thermodynamics. Prof. Cardullo.

Continuation of Course 7. For Electrical and Mechanical Juniors.

Three exercises per week. 2nd S.

9. Mechanical Laboratory. Prof. Cardullo.

Study of apparatus and methods of calibration used in engineering investigations; testing of iron, steel and wood; valve setting and indicator practice. A written report will be required for which one hour additional credit will be given.

Open only to students who have completed Physics 1 and 2 and Mathematics 1 to 6.

Two exercises per week. 1st S.

10. Mechanical Laboratory. Prof. Cardullo.

Study of miscellaneous engineering materials and apparatus, and standard methods of testing; lubricants, cement, fuels,

boilers, engines, pumps, power-plant appliances and supplies, etc. For Electrical and Mechanical Juniors.

Open only to students who have completed Course 9.

Two exercises per week. 2nd S.

11. Hydraulics. Prof. Cardullo.

A study of the principles and practice of hydraulic machinery and measurements. For Electrical and Mechanical Seniors.

Open only to students who have completed Machine Design 5 and Physics 1 and 2.

Four exercises per week. 1st S.

12. Materials of Engineering. Prof. Cardullo.

A study of the properties, commercial forms, methods of preparation and use of engineering materials. For Electrical and Mechanical Seniors.

Three exercises per week. 1st S.

13. Mechanical Laboratory. Prof. Cardullo.

A critical study and detailed analysis of the performance of engineering apparatus, particularly of steam and gas engines, hydraulic apparatus, etc. For Electrical and Mechanical Seniors.

Open only to students who have completed Course 10.

Two exercises per week. 1st S.

14. Mechanical Laboratory. Prof. Cardullo.

Continuation of Course 13. For Mechanical Seniors.

Open only to students who have completed Course 13.

Two exercises per week. 2nd S.

15. Heat Engine Design. Prof. Cardullo.

Study of the structure and proportions of heat engines; design of valves and valve gears, governors, fly wheels and principal members of steam and gas engines and steam turbines. For Mechanical Seniors.

Five exercises per week. 1st S.

16. Shop Design and Equipment. Prof. Putnam.

A study of the proper choice and arrangement of tools, machinery and equipment of all kinds for shops and factories; the design of suitable buildings for housing the same and estimates

of quantities of material and cost of construction. Particular attention will be given to textile mills and machine shops. For Mechanical Seniors.

Four exercises per week. 2nd S.

17. Power Plant Design. Prof. Hewitt, Prof. Cardullo.

A study of different types of power plants, power plant apparatus and equipment and of controlling factors in the cost of power generation and distribution; the design of a power plant to meet given conditions. For Mechanical Seniors.

Two exercises per week. 2nd S.

18. Contracts and Specifications. Prof. Hewitt.

The laws and forms of engineering contracts; standard specifications for engineering materials and apparatus. For Electrical and Mechanical Seniors.

Two exercises per week. 2nd S.

19. Economics of Engineering. Prof. Cardullo.

A discussion of the principles and practice of systems of shop organization and management, cost keeping, wage payment and methods of cost reduction; also a discussion of engineering finance, welfare work, labor conditions, factory laws, etc. For Electrical and Mechanical Seniors.

Three exercises per week. 2nd S.

METEOROLOGY.

1. Meteorology.

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes and methods of prediction of atmospheric changes. For Agricultural Seniors, elective for General Course Seniors.

Two exercises per week. 1st S.

MILITARY SCIENCE AND TACTICS.

CAPT. HUNT.

All male students, unless members of the Senior Class, or physically unfit, are required to drill and attend recitations in Military Science.

Military Science 1 to 8 inclusive consists of Military Drill and includes all the practical instruction in the following subjects:

Close and Extended Order Drills by Company and Battalion, Advance and Rear Guards, Outposts, Marches, Ceremonies, Battalion Review, Parades and Guard Mounting, Calisthenics and Gymnastics, Rifle Practice, First Aid to the Injured.

1. **Military Drill.**
For Freshmen.
Two exercises per week. 1st S.

2. **Military Drill.**
Continuation of Course 1. For Freshmen.
Two exercises per week. 2nd S.

3. **Military Drill.**
For Sophomores.
Two exercises per week. 1st S.

4. **Military Drill.**
Continuation of Course 3. For Sophomores.
Two exercises per week. 2nd S.

5. **Military Drill.**
For Juniors.
Two exercises per week. 1st S.

6. **Military Drill.**
Continuation of Course 5. For Juniors.
Two exercises per week. 2nd S.

7. **Military Drill.**
Elective for Seniors only.
Two exercises per week. 1st S.

8. **Military Drill.**
Continuation of Course 5. Elective for Seniors only.
Two exercises per week. 2nd S.

9. **Infantry Drill Regulations.**
Practical instruction and lectures. For Freshmen.
One exercise per week. 1st S.

10. **Manual of Guard Duty and Small Arms Firing Regulations.**
For Freshmen.
One exercise per week. 2nd S.

11. Military Primer.

Recitations and map problems covering advance and rear guards; outposts; patrols, etc.

For Sophomores.

One exercise per week. 1st S.

12. Military Map Reading and Sketching.

For Sophomores.

One exercise per week. 2nd S.

13. Field Service Regulations.

Preparation of problems requiring the issuing of field orders, knowledge of marches, transportation, subsistence, etc. For Juniors.

One exercise per week. 1st S.

14. Army Regulations and Preparation of Requisitions, etc.

For Juniors.

One exercise per week. 2nd S.

15. Army Organization and Administration.

Lectures and preparation of military papers. Elective for Seniors only.

One exercise per week. 1st S.

16. Army Organization and Administration.

Continuation of Course 15. Elective for Seniors only.

One exercise per week. 2nd S.

PHILOSOPHY AND PEDAGOGY.

PROF. GROVES.

1. Psychology.

An introduction to the study of mental life. The practical needs of the student are related as closely as possible to the work of the course. Elective for General Course Sophomores and Seniors.

Three exercises per week. 1st S.

2. The History of Educational Theory.

The greater part of the course is taken up with the study of the modern educational reformers, Comemius, Rousseau, Pestalozzi,

Froebel, Spencer and Herbart. Elective for General Course Freshmen and Juniors.

Two exercises per week. 2nd S.

3. Philosophy of Education.

The meaning of education is defined from the aspect of the biological, the physiological, the social, the psychological and the philosophical. Horne's Philosophy of Education.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

4. The Problems of School Education.

The method of the recitation; management and discipline of classes, observation of teaching. Elective for General Course Juniors and Seniors.

Three exercises per week. 1st S.

5. School Administration.

Courses of study; school hygiene; school law; a discussion of the essential elements of good administration. Elective for General Course Juniors and Seniors.

Three exercises per week. 2nd S.

6. Introduction to Philosophy.

A general survey of the field of philosophy with special reference to the definition of its problems, its spirit, its method and its relation to the various sciences; the theory of thought and knowledge; the doctrine of nature and of mind. This course aims to acquaint students with the ultimate problems of thought and to suggest possible solutions. Elective for General Course Juniors and Seniors.

Three exercises per week. 1st S.

PHYSICS.

PROF. NESBIT.

1. Mechanics and Heat.

Mechanics: The principles and laws of general physics are illustrated by a number of experiments, and the student is taught to make ready application of his mathematics in the solution of problems.

It is intended to provide a foundation in the dynamics of solids, liquids and gases, and also in the subjects of statics and hydrostatics.

Instruction is given by lectures, recitations and problem work. The text used is Watson's Physics. Reference is made to Ames' Theory of Physics, Duff's Textbook of Physics, and other standard treatises.

Heat: The theories of heat are briefly discussed. The subdivisions of the subject, such as the nature of heat, its effects, thermometry, sources of heat, the transference and transformations of heat are considered in detail. Constant attention is given to the relation of these topics to the subject of thermo-dynamics. Watson's Physics is used as a text. For Agricultural and Engineering Sophomores, elective for General Course Sophomores.

Three exercises per week. 1st S.

2. Light, Sound and Electricity.

Light: The subject is approached from the geometrical and physical standpoint. A number of experiments are performed illustrative of wave motion in general, followed by a study of that form of wave motion upon which the modern theory is based.

The subject is developed progressively and due attention is given to such subjects as reflection, refraction, color, the spectrum, and interference and polarization phenomena.

The student makes a careful study of optical instruments of all classes. Watson's Physics is used as the text.

Sound: The course consists of lectures and recitations, considerable emphasis being laid upon the relation of the subject to the transmission of speech.

The text used is Stone's Elementary Lessons in Sound.

Electricity and Magnetism: Numerous experiments are performed to illustrate the various phenomena of electrostatics, magnetism, current electricity and electric waves. As the course advances, the attention of the student is constantly called to the applications of electricity to the arts and sciences. S. P. Thompson's Elementary Lessons in Electricity and Magnetism is used as a text. For Agricultural and Engineering Sophomores, elective for General Course Sophomores.

Three exercises per week. 2nd S.

3. Elements of Least Squares and the Precision of Measurements.

This course is intended to serve as an introduction to the work in the Physical Laboratory. It familiarizes the student with the

precautions necessary in taking experimental data and of properly using his data in order to secure the most reliable results.

A large number of problems are solved, illustrating the determination of physical constants and in deducing the constants of empirical equations. Bartlett's Least Squares is used as a text in Least Squares. The work in Precision of Measurements consists of a course of lectures and the solution of a number of problems illustrating the application of the subject. For Electrical and Mechanical Juniors, elective for General Course Juniors.

One exercise per week. 1st S.

4. **Physical Laboratory.**

The apparatus employed in the experimental part of Courses 7 and 8 is adapted to no special laboratory manual, and either notes are prepared for students' use or reference is made to the works of Watson, Ames and Bliss, E. L. Nichols, H. M. Godwin and others.

The laws of general physics are investigated experimentally. The student is encouraged to acquire skill in the manipulation of apparatus, habits of clearness and neatness in keeping records, as well as enthusiasm for independent and original investigation.

A careful study is made of the Analytical Balance, time measuring devices, heat measurements, the microscope, spectroscope, lens combinations, photometry, the laws of vibrating strings and the simple electrical measurements. The student has practice in the calibration of galvanometers and ammeters, the determination of the constants of instruments, the measurement of voltages, resistances, etc.

On the completion of Courses 4 and 5, an examination is given to test the student's knowledge of physical research, both in attacking a given problem and in thinking and acting for himself. For Electrical and Mechanical Juniors, elective for General Course Juniors.

One exercise per week. 1st S.

5. **Physical Laboratory.**

A continuation of Course 4. For Electrical and Mechanical Juniors, elective for General Course Juniors.

Three exercises per week. 2nd S.

A fee of ten dollars is required in Courses 4 and 5 to cover breakage, etc. Any unexpended balance is refunded to the student at the close of the college year.

6. Physical Laboratory.

Physical Laboratory work. Similar to Courses 4 and 5. For Chemical Juniors.

Three exercises per week. 2nd S.

POLITICAL SCIENCE.

PROF. SCOTT.

1. Political Economy.

An elementary course, with lectures upon some of the practical questions of the day. For General Course Sophomores, Agricultural Juniors and Engineering Seniors.

Three exercises per week. 2nd S.

2. Laws of Business.

Recitations supplemented by lectures and the discussion of cases. Elective for General Course Juniors and Seniors and Agricultural Seniors.

Three exercises per week. 1st S.

3. American Constitutional Law.

Use is made of Pomeroy's Constitutional Law, which is supplemented by the decisions of the United States Supreme Court. Special attention is given to the connections between American constitutions and American political history. Elective for General Course and Agricultural Seniors.

Three exercises per week. 1st S.

4 Money and Banking.

Recitations, readings and lectures. Elective for Agricultural Seniors and General Course Juniors and Seniors.

Courses 4 and 5 are given in alternate years. Course 4 will be offered in the year 1908—'09.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

5. Public Finance.

Recitations, readings and lectures. Elective for Agricultural Seniors and General Course Juniors and Seniors.

Courses 4 and 5 are given in alternate years. Course 5 will be offered in the year 1909—'10.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

SHOP WORK.

PROF. CARDULLO, MR. BROWN, MR. INGHAM.

Three hours' work in the shop is reckoned as one exercise.

1. **Wood Work.** Mr. Ingham.

Exercises in carpentry work, joinery and pattern making. For Engineering Freshmen, elective for General Course Freshmen.

Engineering Freshmen.

Two and one-half exercises per week. 1st S.

General Course Freshmen.

Two exercises per week. 1st S.

2. **Forging.** Mr. Brown.

This course consists of exercises in upsetting, drawing, forming and welding. For Engineering Freshmen, (Division 2). First ten weeks.

Two exercises per week. 2nd S.

3. **Forging.**

Same as Course 2. For Electrical and Mechanical Sophomores, (Division 1).

Two exercises per week. 1st S.

4. **Machine Work.** Mr. Brown.

A Course in Turning, Facing, Thread Cutting, Milling, Shaping, Scraping, Filing and Planing. For Mechanical and Electrical Sophomores.

Two and one-half exercises per week. 2nd S.

9. **General Machine Work.** Mr. Brown.

Continuation of Course 4. For Electrical and Mechanical Juniors.

One exercise per week. 1st S.

10. **Manufacturing.** Mr. Brown.

Construction and use of jigs and special fixtures; use of limit gauges, special tools, turret and screw machinery; manufacture of some simple machine, using special appliances. For Electrical and Mechanical Juniors.

One exercise per week. 2nd S.

11. **Special Shop Work.**

Work arranged to suit the needs of particular students.

12. **Special Shop Work.**

13. Wood Work. Mr. Ingham.

Same as Course 1. For Agricultural Freshmen. Last nine weeks.

One and one-half exercises per week. 1st S.

14. Forging. Mr. Brown.

For Agricultural Freshmen.

Two exercises per week. 2nd S.

15. Machine Work. Mr. Brown.

Same as Course 4. For Chemical Seniors.

Two exercises per week. 1st S.

SPANISH.

MR. SPENCER.

1. Elementary Spanish.

This course will consist of an elementary study of Spanish grammar, supplemented and followed by reading of easy Spanish texts.

Three exercises per week. 1st S.

2. Elementary Spanish.

This course will consist of a thorough review of Spanish grammar, based on the texts studied in Spanish 1, and reading of more advanced Spanish texts.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

ZOOLOGY.

PROF. SANDERSON, MR. BARROWS, MR. JACKSON.

The courses in Zoology are arranged in sequence for those studying Agriculture or Economic Entomology, and for those desiring a more general course fitting them for teaching or for medical studies, though any courses offered may be taken by those who have completed previous courses necessary.

1. Economic Entomology.

Insects affecting crops, domestic animals, etc., their life, histories and habits and the methods of combating them; special consideration of general farm methods for control of insects affecting staple crops, and of spraying, machinery and insecticides for combating truck and fruit insects. For Agricultural Sophomores, elective for General Course Sophomores.

Three exercises per week. 1st S.

2. General Entomology.

A general survey of the structure, habits and classification of the different orders of insects. Lectures, laboratory dissections and classification. For Agricultural Sophomores, elective for General Course Sophomores.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

3. Vertebrate Anatomy and Physiology.

The comparison of anatomy and physiology of vertebrate animals, the general physiology of higher animals, and laboratory dissections of a few typical forms. Elective for Agricultural and General Course Juniors.

Four exercises per week. 1st S.

4. Advanced Economic Entomology.

The methods of study and general principles of combating insect pests; the literature and history of economic entomology; practice in determining and rearing and combating insect pests. Elective for Agricultural Juniors or Seniors.

Open only to students who have completed Course 2.

Three exercises per week. 2nd S.

5. Advanced Entomology.

Advanced work in General Entomology; collecting, classification and anatomical studies. Elective for Agricultural Juniors and General Course Sophomores.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

6. Invertebrate Zoology.

The structure and life of the invertebrate animals, except insects. Lectures and laboratory dissections of typical forms. Elective for Agricultural Seniors and General Course Sophomores, Juniors and Seniors.

Three exercises per week. 1st S.

†7. General Physiology.

The vital phenomena of animal life with special reference to the nervous, digestive, muscular, secretory and sensory processes in the higher animal forms. Elective for Agricultural and General Course Juniors or Seniors.

Three exercises per week. 2nd S.

8. Evolution.

Lectures taking up the problems of variation, heredity, breeding, and selection from an experimental standpoint, and discussions of recent theories with their bearings on the question of evolution. This course is a basis for advanced work in plant and animal breeding. For Agricultural Seniors, elective for General Course Juniors and Seniors.

Three exercises per week. 1st S.

10 and 11. Advanced Zoology.

This course is arranged to suit the individual needs of students who elect Zoology for Senior year.

Open only to students who have completed previous courses and have shown proficiency in Zoology.

Three or four exercises per week throughout the year.

12. Biological Seminar.

Reports and discussions upon current literature of Zoology and Botany, special topics and observations. Elective for Agricultural and General Course Juniors and Seniors.

One exercise per week throughout the year.

FOUR YEAR COURSES.

COURSES OF STUDY AND SCHEDULE OF HOURS.

(For details see Description of Studies.)

Attendance at Chapel exercises is required of all students and attendance at Military Drill is required of all male students, unless members of the Senior Class or physically unfit.

AGRICULTURAL COURSE.

Freshman Year.

FIRST SEMESTER.

Chemistry 1	Inorganic Chemistry	3
Drawing 1	Industrial Drawing	2

†To be given only when elected by four or more students.

English 1	English Composition and Rhetoric	3
French 1 or *German 1*	Elementary French or Elementary German	3
Horticulture 1	Principles of Horticulture (first eight weeks)	1½
Mathematics 1	Algebra	4
**Mathematics 2*	Solid Geometry	2
Military Science 1	Drill	1
Military Science 9	Infantry Drill Regulations	1
Shop Work 13	Wood Shop (last nine weeks)	1½

SECOND SEMESTER.

Chemistry 2	Inorganic Chemistry	2
Drawing 4	Design of Farm Buildings	2
English 2	English Composition and Rhetoric	3
French 2 or German 2	Elementary French or Elementary German	3
Horticulture 2	Olericulture	2
Mathematics 3	Trigonometry (first ten weeks)	2½
Mathematics 4	Surveying (last seven weeks)	1½
Military Science 2	Drill	1
Military Science 10	Manual of Guard Duty, etc.	1
Shop Work 14	Forge Shop	2

Sophomore Year.

FIRST SEMESTER.

An. Husb. 1	Breeds of Livestock	3
Botany 1	General Botany	3
Chemistry 4	Qualitative Analysis	3
German 3	German Prose of the Nineteenth Century	3
Military Science 3	Drill	1
Military Science 11	Military Primer	1
Physics 1	Mechanics and Heat	3
Zoology 1	Economic Entomology	3

SECOND SEMESTER.

Botany 2	General Botany	3
Chemistry 6	Organic Chemistry	3
German 4	Scientific German	3
Horticulture 3	Practical Pomology	3
Military Science 4	Drill	1
Military Science 12	Military Map Reading and Sketching	1
Physics 2	Light, Sound and Electricity	3
Zoology 2	General Entomology	3

*Elective.

Junior Year.

FIRST SEMESTER.

Agronomy 1	Farm Equipment and Farm Crops	3
†*Botany 3* or	Plant Pathology	4
†*Zoology 3*	Vertebrate Anatomy and Physiology	4
Dairying 1	Farm Dairying	4
Forestry 1	Principles of Forestry	3
Horticulture 4	Greenhouse Construction and Management	2
**Horticulture 8*	Small Fruit Culture	2
Military Science 5	Drill	1
Military Science 13	Field Service Regulations	1

SECOND SEMESTER.

Agronomy 2	Soils and Soil Physics	3
An. Husb. 3	Stock Feeding	3
**An. Husb. 4*	Veterinary Science	3
**An. Husb. 6*	Advanced Livestock	3
**Botany 4* or	Mycology	3
**Botany 5*	Plant Physiology	
**Dairying 3*	Technology of Milk	2
Geology 2	Elementary Geology	3
**Horticulture 5*	Landscape Gardening	3
**Horticulture 7*	Nursery Management	3
Military Science 6	Drill	1
Military Science 14	Army Regulations	1
Political Science 1	Political Economy	3
**Zoology 4* or	Advanced Economic Entomology	3
**Zoology 5* or	Advanced Entomology	
**Zoology 7*	General Physiology	

During the Junior Year students who desire and are qualified to take up work in the Biological or Chemical Divisions of the Agricultural Course may substitute work in these divisions for Dairying 1 and Animal Husbandry 3.

Senior Year.

FIRST SEMESTER.

Agronomy 5	Agricultural Seminar	2
History 5	American History to 1783	3
Meteorology 1	Meteorology	2
Thesis		2
Zoology 8	Evolution	3
Elective Courses		6

*Elective.

†Botany 3 should be elected by students intending to specialize in Horticulture, Zoology 3, by those intending to specialize in Animal Husbandry or Zoology.

SECOND SEMESTER.

Agronomy 6	Agr. History and Economics (first nine weeks)	2
Agronomy 7	Farm Mechanics (last eight weeks)	2
English 6	English Literature	3
History 6	Const. and Political History of U. S. (1783-1837)	3
Thesis		2
Elective Courses		6

ENGINEERING COURSES.

Freshman Year.

FIRST SEMESTER.

Chemistry 1	Inorganic Chemistry	3
Drawing 1	Industrial Drawing	2½
English 1	English Composition and Rhetoric	3
French 1 or *German 1*	Elementary French / Elementary German	3
Mathematics 1	Algebra	4
‡*Mathematics 2*	Solid Geometry	2
Military Science 1	Drill	1
Military Science 9.	Infantry Drill Regulations	1
Shop Work 1	Wood Work	2½

SECOND SEMESTER.

Chemistry 2	Inorganic Chemistry	2
†*Chemistry 4*	Qualitative Analysis (first division)	3
Drawing 2	Descriptive Geometry (first division)	3
Drawing 2	Descriptive Geometry (second division), (first ten weeks)	2
Drawing 3	Continuation of Drawing 2 (second division), (last seven weeks)	2
English 2	English Composition and Rhetoric	3
French 2 or *German 2*	Elementary French / Elementary German	3
Mathematics 3	Trigonometry (first ten weeks)	2½
Mathematics 4	Surveying (last seven weeks)	1½
Military Science 2	Drill	1
Military Science 10	Manual of Guard Duty, etc.	1
†*Shop Work 2*	Forging (second division) (first ten weeks)	2

*Elective.
‡For Freshmen entering without the subject.
†Division 1 elects Chemistry 4 instead of Shop Work 2 and Division 2 elects Shop Work 2 instead of Chemistry 4.

CHEMICAL ENGINEERING COURSE.

Sophomore Year.

FIRST SEMESTER.

Chemistry 5	Qualitative Analysis (first five weeks)	1½
Chemistry 10	Quantitative Analysis (last twelve weeks)	3½
Drawing 7	Elementary Machine Drawing and Free Hand Drawing of Chem. Apparatus	2
German 3	German Prose of the Nineteenth Century	3
Mathematics 5	Analytical Geometry	5
Military Science 3	Drill	1
Military Science 11	Military Primer	1
Physics 1	Mechanics and Heat	3

SECOND SEMESTER.

Chemistry 6	Organic Chemistry	3
Chemistry 11	Quantitative Analysis	6
German 4	Scientific German	3
Mathematics 6	Calculus	5
Military Science 4	Drill	1
Military Science 12	Military Map Reading and Sketching	1
Physics 2	Light, Sound and Electricity	3

Junior Year.

FIRST SEMESTER.

Chemistry 7	Chemistry of Plant and Animal Nutrition	2
Chemistry 8	Organic Chemical Laboratory	3
Chemistry 12	Advanced Quantitative Analysis	5
Chemistry 19	Chemical Journals	2
†*Chemistry 21*	Physical Chemistry	2
Machine Design 3	Theoretical Mechanics	4
Military Science 5	Drill	1
Military Science 13	Field Service Regulations	1

SECOND SEMESTER.

Chemistry 13	Advanced Quantitative Analysis	4
†*Chemistry 14* and	Industrial Chemistry	2
†*Chemistry 15* or	Metallurgy	1
†*Chemistry 22*	Physical and Electro-chemistry	3
Chemistry 20	Chemical Journals	2
Geology 1	Mineralogy	2
Machine Design 5	Theoretical Mechanics	4
Military Science 6	Drill	1
Military Science 14	Army Regulations	1
Physics 6	Physical Laboratory	3

†Given in alternate years.

Senior Year.

FIRST SEMESTER.

Chemistry 16	Assaying	1
Chemistry 21	Physical Chemistry	2
Chemistry 23	Chemical Research and Thesis	8
Elect. Engineering 21	Industrial Electricity	3
Mech. Engineering 7	Thermodynamics	3
**Military Science 7*	Drill	1
**Military Science 15*	Army Organization and Administration	1
Shop Work 15	Machine Shop	2

SECOND SEMESTER.

†*Chemistry 14* and †*Chemistry 15* or †*Chemistry 22*	Industrial Chemistry / Metallurgy / Physical and Electro-chemistry	2 / 1 / 3
Chemistry 24	Thesis	8
Elect. Engineering 22	Industrial Electricity	3
English 6	English Literature	3
**Military Science 8*	Drill	1
**Military Science 16*	Army Organization and Administration	1
Political Science 1	Political Economy	3

ELECTRICAL AND MECHANICAL ENGINEERING COURSES.

Sophomore Year.

FIRST SEMESTER.

‡*Chemistry 4*	Qualitative Chemical Analysis	3
Drawing 5	Descriptive Geometry (first division) (first seven weeks)	1
Drawing 6	Elementary Machine Drawing (first division), (last ten weeks)	1½
Drawing 6	Elementary Machine Drawing (second division)	2
German 3	German Prose of the Nineteenth Century	3
Mathematics 5	Analytical Geometry	5
Machine Design 1	Mechanism	3
Military Science 3	Drill	1
Military Science 11	Military Primer	1
Physics 1	Mechanics and Heat	3
‡*Shop Work 3*	Forging (first division)	2

*Elective.

† Given in alternate years.

Division 1 elects Shop Work 3 instead of Chemistry 4, and Division 2 elects Chemistry 4 instead of Shop Work 3.

SECOND SEMESTER.

Drawing 8	Machine Drawing	2½
German 4	Scientific German	3
Mathematics 6	Calculus	5
Machine Design 2	Mechanism (first ten weeks) . .	

ELECTRICAL ENGINEERING COURSE.

JUNIOR YEAR.

FIRST SEMESTER.

ELECT. ENGINEERING 1 .	Dynamo Electric Machinery, . . .	3
MACHINE DESIGN 3 . .	Theoretical Mechanics, ...	4
MACHINE DESIGN 4 . .	Designing and Drawing, ...	3
MECH. ENGINEERING 7 .	Thermodynamics, ...	3
MECH. ENGINEERING 9 .	Mechanical Laboratory, ...	2
MILITARY SCIENCE 5 . .	Drill, ...	1
MILITARY SCIENCE 13 .	Field Service Regulations, ...	1
PHYSICS 3	Least Squares, ...	1
PHYSICS 4	Physical Laboratory, ...	3
SHOP WORK 9	Machine Work, ...	1

SECOND SEMESTER.

ELECT. ENGINEERING 2 .	Dynamo Electric Machinery, . . .	3
ELECT. ENGINEERING 4 .	Electrical Laboratory, ...	3
* ELECT. ENGINEERING 6 .	Telegraph and Telephone, ...	1
MACHINE DESIGN 5 . .	Theoretical Mechanics, ...	4
MECH. ENGINEERING 8 .	Thermodynamics, ...	3
MECH. ENGINEERING 10 .	Mechanical Laboratory, ...	2
* MILITARY SCIENCE 6 . .	Drill, ...	1
* MILITARY SCIENCE 14 .	Army Regulations, ...	1
PHYSICS 5	Physical Laboratory, ...	4
SHOP WORK 10 . . .	Manufacturing, ...	1

Mech. Engineering 13	Mechanical Laboratory	3
Mech. Engineering 15	Heat Engine Design	5
**Military Science 7*	Drill	1
**Military Science 15*	Army Organization and Administration	1

*Elective.

Senior Year.

FIRST SEMESTER.

Chemistry 16	Assaying	1
Chemistry 21	Physical Chemistry	3

ELECTRICAL ENGINEERING COURSE.

SENIOR YEAR.

FIRST SEMESTER.

ELECT. ENGINEERING 11	Elect. Engineering Practice, ...	3 4
ELECT. ENGINEERING 13	Electrical Railways, ...	2
ELECT. ENGINEERING 15	Electrical Laboratory, ...	4
MECH. ENGINEERING 11	Hydraulics, ...	4
MECH. ENGINEERING 12	Materials of Engineering, ...	3 2
MECH. ENGINEERING 13	Mechanical Laboratory, ...	3
*MILITARY SCIENCE 7	Drill, ...	1
*MILITARY SCIENCE 15	Army Organization and Administration,	1
*EE 28		1-24

SECOND SEMESTER.

ELECT. ENGINEERING 12	Elect. Engineering Practice, . . .	4
ELECT. ENGINEERING 16	Electrical Laboratory, ...	3 4
ELECT. ENGINEERING 18	Thesis, ...	3
MECH. ENGINEERING 14	Mechanical Laboratory, ...	3
MECH. ENGINEERING 19	Economics of Engineering, ...	3
*MILITARY SCIENCE 8	Drill, ...	1
*MILITARY SCIENCE 16	Army Organization and Administration,	1
POLITICAL SCIENCE 1	Political Economy, ...	3
EE 25		3

*Elective.

Military Science 11	Military Primer	1
Physics 1	Mechanics and Heat	3
‡*Shop Work 3*	Forging (first division)	2

*Elective.

† Given in alternate years.

Division 1 elects Shop Work 3 instead of Chemistry 4, and Division 2 elects Chemistry 4 instead of Shop Work 3.

SECOND SEMESTER.

Drawing 8	Machine Drawing	2½
German 4	Scientific German	3
Mathematics 6	Calculus	5
Machine Design 2	Mechanism (first ten weeks)	3
Mech. Engineering 1	Elements of Steam Engineering (last seven weeks)	
Military Science 4	Drill	1
Military Science 12	Military Map Reading and Sketching	1
Physics 2	Light, Sound and Electricity	3
Shop Work 4	Machine Work	2½

MECHANICAL ENGINEERING COURSE

Junior Year.

FIRST SEMESTER.

Elec. Engineering 1	Dynamo Electric Machinery	3
Machine Design 3	Theoretical Mechanics	4
Machine Design 4	Designing and Drawing	4
Mech. Engineering 7	Thermodynamics	3
Mech. Engineering 9	Mechanical Laboratory	2
Military Science 5	Drill	1
Military Science 13	Field Service Regulations	1
Physics 3	Least Squares	1
Physics 4	Physical Laboratory	1
Shop Work 9	Machine Work	1

SECOND SEMESTER.

Elect. Engineering 2	Dynamo Electric Machinery	3
Machine Design 5	Theoretical Mechanics	4
Machine Design 6	Shop Machinery	3
Mech. Engineering 8	Thermodynamics	3
Mech. Engineering 10	Mechanical Laboratory	2
Military Science 6	Drill	1
Military Science 14	Army Regulations	1
Physics 5	Physical Laboratory	3

Senior Year.

FIRST SEMESTER.

Elect. Engineering 17	Electrical Laboratory	2
Elect. Engineering 19	Dynamo Electric Machinery	3
Mech. Engineering 11	Hydraulics	4
Mech. Engineering 12	Materials of Engineering	3
Mech. Engineering 13	Mechanical Laboratory	3
Mech. Engineering 15	Heat Engine Design	5
**Military Science 7*	Drill	1
**Military Science 15*	Army Organization and Administration	1

*Elective.

SECOND SEMESTER.

Elect. Engineering 20	Dynamo Electric Machinery....	2
Mech. Engineering 14	Mechanical Laboratory	3
Mech. Engineering 16	Shop Design and Equipment....	4
Mech. Engineering 17	Power Plant Design	2
Mech. Engineering 19	Economics of Engineering.....	3
**Military Science 8*	Drill	1
**Military Science 16*	Army Organization and Administration	1
Political Science 1	Political Economy	3
Thesis	.....	3

GENERAL COURSE.

The requirements for graduation from the General Course include (1) the completion of all required studies, (2) the completion of one hundred and forty-four semester hours and (3) the election of studies during the Sophomore, Junior and Senior Years according to the group system.

The group system requires that all General Course students shall elect one *major* and two *minor* courses; the *major* to consist of twenty-one credit hours including thesis, in one of the three groups, in addition to the required work of the Freshman Year; and the *minor* to consist of fifteen credit hours in each of the other two groups, in addition to the required work of the Freshman Year.

GROUP I.

Languages and Literature:—English; French; German; Spanish.

GROUP II.

Mathematics and Sciences:—Mathematics; Zoology; Drawing; Agriculture; Mechanical Engineering; Electrical Engineering; Chemistry; Botany; Physics; Geology; Meteorology.

GROUP III.

History; Social Science and Philosophy:—History; Political Science; Philosophy and Pedagogy.

Freshman Year.

FIRST SEMESTER.

Chemistry 1	Inorganic Chemistry	3
**Drawing 1*	Industrial Drawing	2

*Elective

English 1	English Composition and Rhetoric	3
French 1 or *German 1*	Elementary French / Elementary German	3
History 1	History of Europe from 476 to 1492	3
Mathematics 1	Algebra	4
**Mathematics 2*	Solid Geometry	2
Military Science 1	Drill	1
Military Science 9	Infantry Drill Regulations	1
**Shop Work 1*	Wood Work	2

SECOND SEMESTER.

Chemistry 2	Inorganic Chemistry	2
†Drawing 16	Free Hand or Charcoal Drawing (Last seven weeks)	1½
English 2	English Composition and Rhetoric	3
French 2 or *German 2*	Elementary French / Elementary German	3
History 2	History of Europe from 1492 to 1715	3
Mathematics 3	Trigonometry (first ten weeks)	2½
†Mathematics 4	Surveying (Last seven weeks)	1½
Military Science 2	Drill	1
Military Science 10	Manual of Guard Duty	1
**Philosophy 2*	History of Educational Theory	2

Sophomore Year.

FIRST SEMESTER.

†Botany 1 or *†Zoology 1* or *†Zoology 6*	General Botany / Economic Entomology / Invertebrate Zoology	3
**Chemistry 4*	Qualitative Analysis	3
**Drawing 9*	Free Hand Drawing	2
**English 3*	Advanced English Composition and Criticism	3
German 3	German Prose of the Nineteenth Century	3
****History 1*** or **History 3*	History of Europe from 476 to 1492 / History of Europe from 1715 to 1815	3
**Mathematics 5*	Analytical Geometry	5
Military Science 3	Drill	1
Military Science 11	Military Primer	1
**Philosophy 1*	Psychology	3
**Physics 1*	Mechanics and Heat	3

*Elective.

† Freshmen are required to elect either Drawing 16 or Mathematics 4. Sophomores are required to elect one out of each group.

SECOND SEMESTER.

†*Botany 2* or †*Zoology 2* or †*Zoology 5*	General Botany ..... General Entomology ..... Advanced Entomology	3
**Drawing 10*	Free Hand Drawing	2
‡*English 6*	English Literature	3
German 4	Scientific German	3
**History 2* or **History 4*	History of Europe from 1492 to 1715 ..... History of Europe since 1815	3
**Mathematics 6*	Calculus	5
Military Science 4	Drill	1
Military Science 12	Military Map Reading and Sketching	1
**Physics 2*	Light, Sound and Electricity....	3
**Philosophy 2*	History of Educational Theory..	2
Political Science 1	Political Economy	3

Junior Year.

FIRST SEMESTER.

All elective except Military Science and Drill and English 6.

Botany 3	Plant Pathology	4
Botany 6	Plant Histology	3
Chemistry 4	Qualitative Analysis	3
Drawing 11	Architectural Drawing	3
English 3	Advanced English Composition..	3
English 5	English Novel	3
French 3	Scientific French	3
History 5	American History to 1783.....	3
Mathematics 7	Differential Equations	2
Military Science 5	Drill	1
Military Science 13	Field Service Regulations	1
Philosophy 4	Problems of School Education..	3
Philosophy 6	Introduction to Philosophy.....	3
Physics 3	Least Squares and Precision of Measurements	1
Physics 4	Physical Laboratory	1
Political Science 2	Laws of Business	3
Spanish 1	Elementary Spanish	3
Zoology 3	Vertebrate Anatomy and Physiology	4
Zoology 6	Invertebrate Zoology	3
Zoology 8	Evolution	3

SECOND SEMESTER.

Botany 4	Mycology	3
Botany 5	Plant Physiology	3

*Elective.
†Students are required to elect one of the group.
‡Required in Sophomore or Junior year.

Chemistry 6	Organic Chemistry	3
Chemistry 8	Organic Chemical Laboratory	3
Drawing 12	Architectural Drawing	3
English 4	English Drama	3
‡*English 6*	English Literature	3
French 4	French Prose, History and Travel	3
Geology 1	Mineralogy	2
Geology 2	Elementary Geology	3
History 6	Const. and Political History of U. S., 1783-1837	3
Mathematics 8	Quaternions	2
Military Science 6	Drill	1
Military Science 14	Army Regulations	1
Philosophy 3	Philosophy of Education	3
Philosophy 5	School Administration	3
Physics 5	Physical Laboratory	3
Political Science 4 or *Political Science 5*	Money and Banking / Public Finance	3
Spanish 2	Elementary Spanish	3
Zoology 7	General Physiology	3

Senior Year.

FIRST SEMESTER.

All elective.

Botany 3 or *Botany 6* or *Botany 7*	Plant Pathology / Plant Histology / Advanced Botany	3
Chemistry 7	Chemistry of Plant and Animal Nutrition	2
Drawing 13	Advanced Architectural Drawing	3
English 5	English Novel	3
French 5	French Prose of 19th Century	3
Geology 3	Historical Geology	3
German 5	Goethe, His Life and Works	3
History 7	Const. and Political History of U. S. since 1837	3
Meteorology 1	Meteorology	2
Military Science 7	Drill	1
Military Science 15	Army Organization and Administration	1
Philosophy 1	Psychology	3
Philosophy 4	Problems of School Education	3
Philosophy 6	Introduction to Philosophy	3
Political Science 2	Laws of Business	3
Political Science 3	American Constitutional Law	3
Spanish 1	Elementary Spanish	3
Thesis		2
Zoology 6	Invertebrate Zoology	3
Zoology 8	Evolution	3
Zoology 10	Advanced Zoology	3 or 4

†Required in either the Sophomore or Junior year.

SECOND SEMESTER.

Botany 4 or *Botany 5* or *Botany 8*	Mycology Plant Physiology Advanced Botany	3
Drawing 14	Advanced Architectural Drawing	2
English 4	English Drama	3
English 7	American Literature	4
French 6	French Prose of 19th Century	3
Geology 2	Elementary Geology	3
German 6	Goethe (continued)	3
Mathematics 9	Astronomy	2
Military Science 8	Drill	1
Military Science 16	Army Organization and Administration	1
Philosophy 5	School Administration	3
Political Science 4 or *Political Science 5*	Money and Banking Public Finance	3
Spanish 2	Elementary Spanish	3
Thesis		1 or 2
Zoology 7	General Physiology	3
Zoology 11	Advanced Zoology	3 or 4

FIRST SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday		Mathematics 1	Chemistry 1	Military Sci. 1	Drawing 1
Tuesday	English 1	French 1 German 1	Mathematics 1	Military Sci. 9	Drawing 1
Wednesday		Chemistry 1 1st Div.	Chemistry 1 2nd Div.	Horticulture 1 (First eight weeks)	Shop Work 13 (Last nine weeks)
Thursday	English 1	French 1 German 1	Mathematics 1	Mathematics 1	Horticulture 1 (First eight weeks) Shop Work 13 (Last nine weeks)
Friday		Chemistry 1 1st Div.	Chemistry 1 2nd Div.	Military Sci. 1	Horticulture 1 (First eight weeks) Shop Work 13 (Last nine weeks)
Saturday	English 1	French 1 German 1	Mathematics 1	Mathematics 1	

SECOND SEMESTER

Monday	Military Sci. 10		Chemistry 2	Military Sci. 2	Shop Work 14 (First ten weeks) Mathematics 4 (Last seven weeks)
Tuesday	English 2	French 2 German 2		Mathematics 3 (First ten weeks)	Shop Work 14 (First ten weeks) Mathematics 4 (Last seven weeks)
Wednesday	Drawing 4	Drawing 4	Horticulture 2	Mathematics 3 (First ten weeks)	Drawing 4 (First ten weeks) Mathematics 4 (Last seven weeks)
Thursday	English 2	French 2 German 2	Mathematics 3 (First ten weeks)	Mathematics 3 (First ten weeks)	Horticulture 2
Friday	Drawing 4	Drawing 4	Chemistry 2	Military Sci. 2	Drawing 4 (First ten weeks) Mathematics 4 (Last seven weeks)
Saturday	English 2	French 2 German 2	Mathematics 3 (First ten weeks)	Mathematics 3 (First ten weeks)	

2 First Semester hours to be arranged.

AGRICULTURAL COURSE—SOPHOMORE YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday		Military Sci. 11	†Botany 1	†Military Sci. 3	Chemistry 4
	Tuesday		Zoology 1	Physics 1	German 3	Chemistry 4
	Wednesday	Animal Husb. 1		Botany 1	Botany 1	Chemistry 4
	Thursday	Zoology 1	Zoology 1	Physics 1	German 3	Animal Husb. 1
	Friday	Animal Husb. 1		†	†Military Sci. 3	Zoology 1
	Saturday	Botany 1	Botany 1	Physics 1	German 3	
SECOND SEMESTER	Monday	Chemistry 6	Zoology 2	†Botany 2	†Military Sci. 4	Horticulture 3
	Tuesday		Chemistry 6	Physics 2	German 4	Botany 2
	Wednesday	Horticulture 3		Military Sci. 12		Botany 2
	Thursday		Chemistry 6	Physics 2	German 4	
	Friday	Horticulture 3		†Zoology 2	†Military Sci. 4	Zoology 2
	Saturday			Physics 2	German 4	

†These periods are transposed from December 1 to March 31.

AGRICULTURAL COURSE—JUNIOR YEAR.

FIRST SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday	*Horticulture 8	Forestry 1		Military Sci. 5	Zoology 3 Botany 3
Tuesday	Chemistry 7	Forestry 1		Agronomy 1	Horticulture 4
Wednesday	Chemistry 7	Dairying 1	Zoology 3 Botany 3	Horticulture 4	Forestry 1
Thursday	Dairying 1	Dairying 1	Dairying 1	Agronomy 1	Zoology 3 Botany 3
Friday	*Horticulture 8	Dairying 1	Zoology 3 Botany 3	Military Sci. 5	Agronomy 1
Saturday	Dairying 1	Dairying 1	Dairying 1	Military Sci. 13	

SECOND SEMESTER

Monday	*Horticulture 5	*Horticulture 5	Geology 2	Military Sci. 6	Agronomy 2
Tuesday	*Horticulture 7 *Animal Husb. 6	Political Sci. 1	*Animal Husb. 4	Agronomy 2	*Botany 4 or 5 *Dairying 3 *Zoology 4 or 5
Wednesday	*Botany 4 or 5	*Botany 4 or 5	Animal Husb. 3	Agronomy 2	*Animal Husb. 6 *Horticulture 7 *Zoology 4 or 5
Thursday	*Horticulture 7 *Animal Husb. 6	Political Sci. 1	Animal Husb. 3	Geology 2	Geology 2
Friday	*Horticulture 5	*Horticulture 5 *Dairying 3	*Animal Husb. 4	Military Sci. 6	Animal Husb. 3
Saturday		Political Sci. 1	*Botany 4 or 5 *Animal Husb. 4 *Zoology 4 or 5	Military Sci. 14	

For hours of courses not scheduled, see instructor.
*Elective.

AGRICULTURAL COURSE—SENIOR YEAR.

FIRST SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday	*Zoology 6	*Animal Husb. 7	*Dairying 6 *Horticulture 9	*Horticulture 11	*Agronomy 3
Tuesday	Zoology 8	*Animal Husb. 7 Zoology 6	History 5	*Horticulture 11	Agronomy 5
Wednesday		Meteorology 1	*Dairying 6 *Horticulture 9	*Agronomy 3	*Botany 5 *Animal Husb. 7
Thursday	Zoology 8	*Botany 5	History 5	*Animal Husb. 7	*Agronomy 3 *Horticulture 11
Friday		Meteorology 1	*Botany 5	*Horticulture 11	*Horticulture 9 *Zoology 6
Saturday	Zoology 8		History 5		

SECOND SEMESTER

Monday	*Horticulture 10	Agronomy 6 (First nine weeks) Agronomy 7 (Last eight weeks)	History 6	*Agronomy 4	*Botany 5
Tuesday	*Horticulture 6	Agronomy 6 (First nine weeks) Agronomy 7 (Last eight weeks)	English 6	*Animal Husb. 2	*Animal Husb. 5
Wednesday	*Horticulture 10	Agronomy 6 (First nine weeks) Agronomy 7 (Last eight weeks)	History 6	*Animal Husb. 2	*Botany 5
Thursday	*Horticulture 12 or *Horticulture 13	Agronomy 6 (First nine weeks) Agronomy 7 (Last eight weeks)	English 6	*Agronomy 4	*Horticulture 6
Friday		*Animal Husb. 5	History 6		
Saturday	*Horticulture 12 or *Horticulture 13	*Horticulture 12 or *Horticulture 13 *Botany 5	English 6		

*Elective.

For hours of courses not scheduled see instructor.

ENGINEERING COURSES—FRESHMAN YEAR.

FIRST DIVISION.

FIRST SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday		English 1	Chemistry 1	Military Sci. 1	Shop Work 1
Tuesday	German 1	French 1	Military Sci. 9 (Sec. 1)	Mathematics 1	Shop Work 1
Wednesday		English 1	Chemistry 1	Mathematics 1	Drawing 1 Shop Work 1
Thursday	German 1	French 1	Mathematics 1	Mathematics 1	Drawing 1
Friday		English 1	Chemistry 1	Military Sci. 1	Drawing 1
Saturday	German 1	French 1	Mathematics 1	Mathematics 1	

SECOND SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday	German 2	English 2	Chemistry 2	Military Sci. 2	Chemistry 4 (First ten weeks) Mathematics 4 (Last seven weeks)
Tuesday	Drawing 2	French 2 Drawing 2	Mathematics 3 (First ten weeks)	Military Sci. 10 (1st sec.)	Chemistry 4 (First ten weeks) Mathematics 4 (Last seven weeks)
Wednesday	German 2	English 2	Mathematics 3 (First ten weeks)	Military Sci. 10 (2d sec.)	Chemistry 4 (First ten weeks) Mathematics 4 (Last seven weeks)
Thursday	Drawing 2	French 2 Drawing 2	Mathematics 3 (First ten weeks) Drawing 2 (Last seven weeks)	Mathematics 3 (First ten weeks) Drawing 2 (Last seven weeks)	Chemistry 4 (First ten weeks) Mathematics 4 (Last seven weeks)
Friday	German 2	English 2	Chemistry 2	Military Sci. 2	Chemistry 4 (First ten weeks) Mathematics 4 (Last seven weeks)
Saturday	Drawing 2	French 2 Drawing 2	Mathematics 3 (First ten weeks) Drawing 2 (Last seven weeks)	Mathematics 3 (First ten weeks) Drawing 2 (Last seven weeks)	

Mathematics 2, First Semester, hours to be arranged.

ENGINEERING COURSES—FRESHMAN YEAR.

SECOND DIVISION.

FIRST SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday		Mathematics 1	Chemistry 1	Military Sci. 1	Drawing 1
Tuesday	English 1	French 1 German 1	Mathematics 1.	Military Sci. 9 (Sec. 1)	Drawing 1
Wednesday			Chemistry 1	Military Sci. 9 (Sec. 2)	Drawing 1 Shop Work 1
Thursday	English 1	French 1 German 1	Mathematics 1	Mathematics 1	Shop Work 1
Friday			Chemistry 1	Military Sci. 1	Shop Work 1
Saturday	English 1	French 1 German 1	Mathematics 1	Mathematics 1	

SECOND SEMESTER

Monday		Military Sci. 10 (Sec. 1)	Chemistry 2	Military Sci. 2	Drawing 2 (First ten weeks) Mathematics 4 (Last seven weeks)
Tuesday	English 2	French 2 German 2	Drawing 3 (Last seven weeks)	Mathematics 3 (First ten weeks) Drawing 3 (Last seven weeks)	Drawing 2 (First ten weeks) Mathematics 4 (Last seven weeks)
Wednesday	Drawing 2 (First ten weeks)	Drawing 2 (First ten weeks)	Drawing 2 (First ten weeks)	Mathematics 3 (First ten weeks)	Shop Work 2 (First ten weeks) Mathematics 4 (Last seven weeks)
Thursday	English 2	French 2 German 2	Mathematics 3 (First ten weeks) Drawing 3 (Last seven weeks)	Mathematics 3 (First ten weeks) Drawing 3 (Last seven weeks)	Shop Work 2 (First ten weeks) Mathematics 4 (Last seven weeks)
Friday	Drawing 2 (First ten weeks)	Drawing 2 (First ten weeks)	Chemistry 2	Military Sci. 2	Shop Work 2 (First ten weeks) Mathematics 4 (Last seven weeks)
Saturday	English 2	German 2 French 2	Mathematics 3 (First ten weeks) Drawing 3 (Last seven weeks)	Mathematics 3 (First ten weeks) Drawing 3 (Last seven weeks)	

Mathematics 2, First Semester. hours to be arranged.

CHEMICAL ENGINEERING COURSE—SOPHOMORE YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday	Chemistry 5 (First five weeks.) Chemistry 10 (Last twelve Weeks)	Chemistry 5 (First five weeks.) Chemistry 10 (Last twelve weeks)	†Chemistry 5 (First five weeks) †Chemistry 10 (Last twelve weeks)	†Military Sci. 3	Chemistry 5 (First five weeks) Chemistry 10 (Last twelve weeks)
	Tuesday	Mathematics 5		Physics 1	German 3	Chemistry 5 (First five weeks) Chemistry 10 (Last twelve weeks)
	Wednesday	Mathematics 5	Chemistry 5 (First five weeks.) Chemistry 10 (Last twelve weeks.)	Chemistry 5 (First five weeks) Chemistry 10 (Last twelve weeks)	Chemistry 5 (First five weeks) Chemistry 10 (Last twelve weeks)	Chemistry 5 (First five weeks) Chemistry 10 (Last twelve weeks)
	Thursday	Mathematics 5	Mathematics 5	Physics 1	German 3	Drawing 7
	Friday	Mathematics 5	Military Sci. 11	†	†Military Sci. 3	Drawing 7
	Saturday	Mathematics 5	Mathematics 5	Physics 1	German 3	
SECOND SEMESTER	Monday	Chemistry 6	Military Sci. 12	†	†Military Sci. 4	Chemistry 11
	Tuesday	Mathematics 6	Chemistry 6	Physics 2	German 4	Chemistry 11
	Wednesday	Mathematics 6	Chemistry 11	Chemistry 11	Chemistry 11	Chemistry 11
	Thursday	Mathematics 6	Chemistry 6	Physics 2	German 4	Chemistry 11
	Friday	Mathematics 6	Mathematics 6	†	†Military Sci. 4	Chemistry 11
	Saturday	Mathematics 6	Mathematics 6	Physics 2	German 4	

†These periods are transposed from December 1 to March 31.

CHEMICAL ENGINEERING COURSE—JUNIOR YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday	Chemistry 8	Chemistry 19	Machine Design 3	Military Sci. 5	Chemistry 12
	Tuesday	Chemistry 7	Chemistry 12	Chemistry 21	Chemistry 12	Chemistry 12
	Wednesday	Chemistry 7	Chemistry 19	Machine Design 3		Chemistry 12
	Thursday	Machine Design 3		Chemistry 21	Chemistry 12	Chemistry 8
	Friday	Chemistry 12	Chemistry 12	Chemistry 12	Military Sci. 5	Chemistry 8
	Saturday		Machine Design 3		Military Sci. 13	
SECOND SEMESTER	Monday	Geology 1	Geology 1	Machine Design 5	Military Sci. 6	Chemistry 13
	Tuesday	Machine Design 5		Chemistry 20	Chemistry 14 Chemistry 15 Chemistry 22	Chemistry 13
	Wednesday	Machine Design 5	Chemistry 13	Chemistry 13	Chemistry 13	Physics 6
	Thursday	Chemistry 13	Chemistry 13	Chemistry 20	Chemistry 14 Chemistry 15 Chemistry 22	Physics 6
	Friday	Geology 1	Geology 1		Military Sci. 6	Physics 6
	Saturday	Chemistry 13	Chemistry 13	Machine Design 5	Chemistry 14 Chemistry 15 Chemistry 22 Military Sci. 14	

CHEMICAL ENGINEERING COURSE—SENIOR YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday	Elect. Eng. 21	Chemistry 23	Chemistry 23	Chemistry 23	Chemistry 23
	Tuesday	Elect. Eng. 21	Elect. Eng. 21	Chemistry 21		Chemistry 23
	Wednesday	Shop Work 15	Shop Work 15	Shop Work 15	Mech. Eng. 7	Chemistry 23
	Thursday	Chemistry 23	Chemistry 23	Chemistry 21	Chemistry 23	Chemistry 23
	Friday	Elect. Eng. 21	Mech. Eng. 7	Chemistry 23	Chemistry 23	Chemistry 23
	Saturday	Mech. Eng. 7	Chemistry 16	Chemistry 16	Chemistry 16	
SECOND SEMESTER	Monday	Chemistry 24	Chemistry 24	Chemistry 24	Chemistry 24	Chemistry 24
	Tuesday	Political Sci. 1	Elect. Eng. 22	English 6	Chemistry 14 Chemistry 15 Chemistry 22	Chemistry 24
	Wednesday	Elect. Eng. 22	Elect. Eng. 22	Chemistry 24	Chemistry 24	Chemistry 24
	Thursday	Political Sci. 1		English 6	Chemistry 14 Chemistry 15 Chemistry 22	Chemistry 24
	Friday	Elect. Eng. 22	Chemistry 24	Chemistry 24	Chemistry 24	Chemistry 24
	Saturday	Political Sci. 1		English 6	Chemistry 14 Chemistry 15 Chemistry 22	

ELECTRICAL AND MECHANICAL ENGINEERING COURSES—SOPHOMORE YEAR.

FIRST SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday	Machine Design 1	Military Sci. 11	†	†Military Sci. 3	Chemistry 4 Shop Work 3
Tuesday	Mathematics 5		Physics 1	German 3	Chemistry 4 Shop Work 3
Wednesday	Mathematics 5	Machine Design 1			Drawing 5 (Div. 1) (1st 7 wks.) Chemistry 4
Thursday	Mathematics 5	Mathematics 5	Physics 1	German 3	Drawing 5 (Div. 1) (1st 7 wks.) Drawing 6 (Div. 2)
Friday	Mathematics 5		†Machine Design 1	†Military Sci. 3	Drawing 5 (Div. 1) (1st 7 wks.) Drawing 6 (Div. 2)
Saturday	Mathematics 5	Mathematics 5	Physics 1	German 3	

SECOND SEMESTER

Monday	Machine Design 2 (First ten weeks) Mech. Eng. 1 (Last seven weeks)		†	†Military Sci. 4	Shop Work 4
Tuesday	Mathematics 6		Physics 2	German 4	Shop Work 4
Wednesday	Mathematics 6	Machine Design 2 (First ten weeks) Mech. Eng. 1 (Last seven weeks)	Military Sci. 12		Drawing 8 Shop Work 4
Thursday	Mathematics 6		Physics 2	German 4	Drawing 8
Friday	Mathematics 6	Mathematics 6	†Machine Design 2 (First ten weeks) †Mech. Eng. 1 (Last seven weeks)	†Military Sci. 4	Drawing 8
Saturday	Mathematics 6	Mathematics 6	Physics 2	German 4	

†These periods are transposed from December 1 to March 31.

ELECTRICAL ENGINEERING COURSE—JUNIOR YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday	Phy 3	Elect. Eng. 1	Machine Design 3	~~Military Sci. 5~~	~~Physics 3~~ Physics 4
	Tuesday	~~Machine Design 4~~	Machine Design 4	Machine Design 4	Machine Design 4	~~Physics 3~~ Physics 4
	Wednesday	Machine Design 4	Elect. Eng. 1	Machine Design 3	Mech. Eng. 7	Shop Work 9
	Thursday	Machine Design 3	Machine Design 4	Machine Design 4	Machine Design 4	Machine Design 4
	Friday	Machine Design 4	Mech. Eng. 7	Elect. Eng. 1	~~Military Sci. 5~~	Mech. Eng. 9
	Saturday	Mech. Eng. 7	Machine Design 3	Mech. Eng. 9	~~Military Sci. 13~~ Phy 3	
SECOND SEMESTER	Monday	EE6	Elect. Eng. 2	Machine Design 5	~~Military Sci. 6~~	Elect. Eng 4
	Tuesday	Machine Design 5	Shop Work 10	Shop Work 10	Shop Work 10	Mech. Eng. 10
	Wednesday	Machine Design 5	Elect. Eng. 2	Mech. Eng. 8	EL 6 Phy 5	Physics 5
	Thursday	Elect. Eng. 4	EE4	Elect. Eng. 6	Mech. Eng. 8	Physics 5
	Friday	Mech. Eng. 10	Mech. Eng. 8	Elect. Eng 2	~~Military Sci. 6~~	Physics 5
	Saturday			Machine Design 5	~~Military Sci. 14~~	

ELECTRICAL ENGINEERING COURSE—SENIOR YEAR.

FIRST SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday	Elect. Eng. 15		Mech. Eng. 11	~~Military Sci. 7~~	Mech. Eng. 13
Tuesday	Mech. Eng. 12		Elect. Eng. 11	EE 13	Elect. Eng. 15
Wednesday	M.E. 13	Mech. Eng. 11	Elect. Eng. 11	~~Mech. Eng. 13~~	
Thursday	Mech. Eng. 12	Elect. Eng. 11	Mech. Eng. 11	Elect. Eng. 13	EE 15
Friday			Mech. Eng. 11	~~Military Sci. 7~~	~~Elect. Eng. 15~~
Saturday	EE 23 ~~Mech. Eng. 12~~	Elect. Eng. 11		~~Military Sci. 15~~	

SECOND SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday	Mech. Eng. 19	Elect. Eng. 12	Thesis	~~Military Sci. 8~~	Thesis
Tuesday	~~Political Sci. 1~~	P.S. 1	EE 25 ~~Mech. Eng. 14~~	EE 16	Elect. Eng. 16
Wednesday	Thesis	Thesis	Elect. Eng. 12	Mech. Eng. 19	EE 25 ~~Mech. Eng. 14~~
Thursday	~~Political Sci. 1~~	P.S. 1 ~~Elect. Eng. 12~~		EE 25	Elect. Eng. 16
Friday		Elect. Eng. 12	Mech. Eng. 19	~~Military Sci. 8~~	Thesis
Saturday	EE 12 ~~Political Sci. 1~~	P. S. 1	~~Thesis~~	~~Military Sci. 16~~	

MECHANICAL ENGINEERING COURSE—JUNIOR YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday		Elect. Eng. 1	Machine Design 3	Military Sci. 5	Physics 3 Physics 4
	Tuesday	Machine Design 4	Machine Design 4	Machine Design 4	Machine Design 4	Physics 3 Physics 4
	Wednesday	Machine Design 4	Elect. Eng. 1	Machine Design 3	Mech. Eng. 7	Shop Work 9
	Thursday	Machine Design 3	Machine Design 4	Machine Design 4	Machine Design 4	Machine Design 4
	Friday	Machine Design 4	Mech. Eng. 7	Elect. Eng. 1	Military Sci. 5	Mech. Eng. 9
	Saturday	Mech. Eng. 7	Machine Design 3	Mech. Eng. 9	Military Sci. 13	
SECOND SEMESTER	Monday		Elect. Eng. 2	Machine Design 5	Military Sci. 6	Machine Design 6
	Tuesday	Machine Design 5	Shop Work 10	Shop Work 10	Shop Work 10	Mech. Eng. 10
	Wednesday	Machine Design 5	Elect. Eng. 2	Mech. Eng. 8	Machine Design 6	Physics 5
	Thursday	Machine Design 6	Machine Design 6	Machine Design 6	Mech. Eng. 8	Physics 5
	Friday	Mech. Eng. 10	Mech. Eng. 8	Elect. Eng. 2	Military Sci. 6	Physics 5
	Saturday	EE 17 Machine Design 6	EE 17 Machine Design 6	Machine Design 5	Military Sci. 14	

MECHANICAL ENGINEERING COURSE—SENIOR YEAR.

FIRST SEMESTER

Day	8-9	9-10	10-11	11-12	P. M.
Monday	Mech. Eng. 15	Elect. Eng. 19	Mech. Eng. 11	Military Sci. 7	Mech. Eng. 13
Tuesday	Mech. Eng. 12	Mech. Eng. 15	Mech. Eng. 15	Mech. Eng. 15	M.E. 13
Wednesday	Mech. Eng. 13	Mech. Eng. 11	~~Elect. Eng. 19~~	EE 19 ~~Mech. Eng. 13~~	~~Mech. Eng. 15~~
Thursday	Mech. Eng. 12	15	Mech. Eng. 11		~~Elect. Eng. 17~~
Friday		Elect. Eng. 19	Mech. Eng. 11	Military Sci. 7	EE 17
Saturday	EE 23 ~~Mech. Eng. 12~~	Mech. Eng. 15	Mech. Eng. 15	Mech. Eng. 15	

SECOND SEMESTER

Monday	Mech. Eng. 19		Elect. Eng. 20	Military Sci. 8	Thesis
Tuesday	Political Sci. 1	Mech. Eng. 17	Mech. Eng. 14		Thesis
Wednesday	Elect. Eng. 20	Mech. Eng. 16		Mech. Eng. 19	Mech. Eng. 14
Thursday	Political Sci. 1	Thesis	Thesis	Thesis	Mech. Eng. 16
Friday		Mech. Eng. 16	Mech. Eng. 19	Military Sci. 8	Mech. Eng. 16
Saturday	Political Sci. 1	Mech. Eng. 17			

GENERAL COURSE—FRESHMAN YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday		Mathematics 1	Chemistry 1	Military Sci. 1	*Drawing 1
	Tuesday	English 1	French 1 German 1	Mathematics 1	Military Sci. 9	*Drawing 1
	Wednesday		History 1 or History 3	Chemistry 1		*Shop Work 1
	Thursday	English 1	French 1 German 1	Mathematics 1	Mathematics 1	History 1 or History 3
	Friday		History 1 or History 3	Chemistry 1	Military Sci. 1	*Shop Work 1
	Saturday	English 1	French 1 German 1	Mathematics 1	Mathematics 1	
SECOND SEMESTER	Monday	Military Sci. 10	*Philosophy 2	Chemistry 2	Military Sci. 2	Drawing 16 (Last seven weeks) Mathematics 4 (Last seven weeks)
	Tuesday	English 2	French 2 German 2		Mathematics 3 (First ten weeks)	Drawing 16 (Last seven weeks) Mathematics 4 (Last seven weeks)
	Wednesday		History 2 or History 4	*Philosophy 2	Mathematics 3 (First ten weeks)	Drawing 16 (Last seven weeks) Mathematics 4 (Last seven weeks)
	Thursday	English 2	French 2 German 2	Mathematics 3 (First ten weeks)	Mathematics 3 (First ten weeks)	History 2 or History 4
	Friday		History 2 or History 4	Chemistry 2	Military Sci. 2	Drawing 16 (Last seven weeks) Mathematics 4 (Last seven weeks)
	Saturday	English 2	French 2 German 2	Mathematics 3 (First ten weeks)	Mathematics 3 (First ten weeks)	

*Elective.

Mathematics 2, First Semester, hours to be arranged.

GENERAL COURSE—SOPHOMORE YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday	‡Zoology 6	Military Sci. 11	‡†Botany 1	†Military Sci. 3	*Chemistry 4
	Tuesday	*Mathematics 5	‡Zoology 1 ‡Zoology 6	*Philosophy 1 *Physics 1	German 3	*Chemistry 4
	Wednesday	*Mathematics 5	*History 1 *History 3	‡Botany 1	‡Botany 1	*Chemistry 4
	Thursday	‡Zoology 1 *Mathematics 5	‡Zoology 1	*Philosophy 1 *Physics 1	German 3	*History 1 *History 3
	Friday	*Mathematics 5	*History 1 or *History 3	‡	†Military Sci. 3	‡Zoology 1 ‡Zoology 6
	Saturday	*Mathematics 5 ‡Botany 1	*Mathematics 5 ‡Botany 1	*Philosophy 1 *Physics 1	German 3	
SECOND SEMESTER	Monday		‡Zoology 2	‡†Botany 2	†Military Sci. 4	
	Tuesday	*Mathematics 6	Political Sci. 1	English 6 *Physics 2	German 4	‡Botany 2 ‡Zoology 5
	Wednesday	*Mathematics 6	*History 2 *History 4	Military Sci. 12		‡Botany 2 ‡Zoology 5
	Thursday	*Mathematics 6	Political Sci. 1	English 6 *Physics 2	German 4	*History 2 *History 4
	Friday	*Mathematics 6	*History 2 *History 4	‡†Zoology 2	†Military Sci. 4	‡Zoology 2
	Saturday	*Mathematics 6	Political Sci. 1	English 6 *Physics 2 ‡Zoology 5	German 4	

†These periods are transposed from December 1 to March 31.

‡Students are required to select for 1st Semester, Zoology 1 or 6, or Botany 1, and for 2nd Semester, Zoology 2 or 5, or Botany 2

*Elective.

GENERAL COURSE—JUNIOR YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday	Zoology 6	French 3	English 3	Philosophy 4 Military Sci. 5	Botany 3 Chemistry 4 Spanish 1 Zoology 3
	Tuesday	Zoology 8	Political Sci. 2 Zoology 6	History 5		Chemistry 4 Spanish 1
	Wednesday		French 3	Botany 3 Zoology 3	Philosophy 4 English 3	Chemistry 4 Spanish 1
	Thursday	Zoology 8	Political Sci. 2	History 5		Botany 3 Zoology 3 Zoology 6
	Friday		French 3	Botany 3 Zoology 3	Philosophy 4 Military Sci. 5	English 3
	Saturday	Zoology 8	Political Sci. 2	History 5	Military Sci. 13	
SECOND SEMESTER	Monday	Chemistry 6 Geology 1	French 4 Mathematics 9	Geology 2 History 6	Philosophy 5 Military Sci. 6	Spanish 2
	Tuesday		Chemistry 6 Philosophy 3	English 6	Political Sci. 4 Political Sci. 5	English 4 Spanish 2
	Wednesday		French 4 Mathematics 9	History 6	Philosophy 5 Geology 2	Spanish 2
	Thursday		Chemistry 6 Philosophy 3	English 6	Political Sci. 4 Political Sci. 5	English 4 Geology 2
	Friday	Geology 1	French 4	History 6	Philosophy 5 Military Sci. 6	English 4
	Saturday		Philosophy 3	English 6	Political Sci. 4 Political Sci. 5 Military Sci. 14	

For hours of courses not scheduled, see instructor.

All elective.

GENERAL COURSE—SENIOR YEAR.

	Day	8-9	9-10	10-11	11-12	P. M.
FIRST SEMESTER	Monday	German 5	Zoology 6 Philosophy 6	French 5	Philosophy 4 Political Sci. 3	Botany 6 History 7 Spanish 1
	Tuesday	English 5 Zoology 8	Political Sci. 2 Zoology 6	French 9 Philosophy 1		Spanish 1
	Wednesday	German 5	Philosophy 6 Meteorology 1	Botany 6 French 5	Philosophy 4 Political Sci. 3	History 7 Spanish 1
	Thursday	English 5	Zoology 8 Political Sci. 2	French 9 German 9 Philosophy 1		Zoology 6
	Friday	German 5	Philosophy 6 Meteorology 1	French 5	Philosophy 4 Political Sci. 3	Botany 6 History 7
	Saturday	English 5 Zoology 8	Political Sci. 2	German 9 Philosophy 1		
SECOND SEMESTER	Monday	German 6	Mathematics 9	French 6 Geology 2	Philosophy 5 English 7	Spanish 2
	Tuesday		Philosophy 3	French 10	Political Sci. 4 or Political Sci. 5	English 4 Spanish 2
	Wednesday	German 6	Mathematics 9	French 6	Philosophy 5 English 7	Spanish 2
	Thursday		Philosophy 3	German 10 French 10	Geology 2 Political Sci. 4 or Political Sci. 5	English 4 Geology 2
	Friday	German 6		French 6	Philosophy 5 English 7	English 4 English 7
	Saturday		Philosophy 3	German 10	Political Sci. 4 or Political Sci. 5	

For hours of courses not scheduled, see instructor.
All elective.

TWO YEAR COURSE IN AGRICULTURE.

This course was established by the state legislature in 1895, and provides an opportunity for those students to secure a training for their life work who do not have the time, money or preparation to take a four year college course.

The course is especially arranged and suited for the young, bright boys of the farm, who expect to make a business of some line of agricultural or horticultural work. Although it is open to students who have had no previous training on the farm, the entrance of such is not encouraged because of their lack of practical experience. By independent work and close application, however, inexperienced students sometimes pass the course with credit.

Three new and important changes in the course have been made this year. The first is the shortening of the school year from thirty-five to thirty weeks. This change is made for the purpose of having the students complete their year's work about the last of April so as to be able to go home for the spring work on the farm or to accept salaried positions for the summer. It also permits of more than four months' time for those students who are dependent upon their own resources to earn money for the following year. The second change is the separation of the two and four year classes all the way through the course. This separation has not heretofore been made in most of the agricultural and horticultural subjects, but with an increased teaching force in these two departments for the coming year, it is made complete. The making of the classes separate and distinct makes it possible to plan and give the work of the two year course in a manner best suited to the needs of its students. In short, the course has been made just as practical as possible. The third change is the division of the year into two terms instead of three. The first term will be eighteen weeks in length and the second twelve.

The work of the first year is largely preparatory, being a study of the sciences underlying agriculture, together with some elementary agricultural and horticultural work. The second year contains optional studies so that it is possible for students to specialize in animal industry, dairying, forestry or greenhouse work. Ten hours per week on the average are spent in practical work on the farm, in the barn, greenhouses or shops.

ADMISSION.

The course is open to those who can pass a fair and reasonable examination in reading, spelling, writing, arithmetic, English grammar, geography and history of the United States. Applicants, unless over eighteen years of age, who do not bring high school or other satisfactory certificates to show their proficiency in these subjects, will be given an entrance examination on Tuesday afternoon and Wednesday morning of the opening week of school. Applicants who are over eighteen years of age will be admitted without examination.

OPENING.

The course for the year will open Wednesday, September 17, 1908, and close Wednesday, May 5, 1909. A Christmas vacation of two weeks and a spring vacation of five days will be given.

EXPENSES.

The expenses of the course will vary with the tastes and frugality of the students and the kind of accommodations which they secure. The total average expense for the year is not far from $250. Many students by working for their board or room rent, or by doing various kinds of work about the college or village, are able to go through the year with a cash outlay not exceeding $150.

CERTIFICATES.

No degree is given at the end of the course, but a certificate of graduation is issued upon the completion of it or its equivalent.

DESCRIPTION OF STUDIES.

AGRONOMY.

31. Elementary Agriculture.

Text-book and recitations upon the elementary principles of Agriculture, including a study of the soil, the plant and the animal, and their relations to each other; also a brief study of the different breeds of livestock, their breeding and feeding. For Two Year Agricultural Students, First Year.

Three exercises per week. 1st S.

32. Farm Equipment and Farm Crops.

This course is similar to Agronomy 1, although less detailed. For Two Year Agricultural Students, Second Year.

Three exercises per week. 1st S.

33. Soils and Soil Physics.

This course is similar to Agronomy 2, but involves less mathematics and physics. For Two Year Agricultural Students, Second Year.

Three exercises per week. 2nd S.

34. Manures and Fertilizers.

Text-book and recitations upon the constituents of farm manures, and chemical fertilizers, the care and application of manures, the mixture of fertilizers and the modifications required by different soils and crops. For Two Year Agricultural Students, Second Year.

Two exercises per week. 2nd S.

ANIMAL HUSBANDRY.

31. Breeds of Live Stock.

Similar to An. Husb. 1. For Two Year Agricultural Students, Second Year.

Three exercises per week. 1st S.

32. Sheep Raising.

Lectures and recitations upon the breeds of sheep; their adaptability to this section; their care and management; their fitting for the shows and feeding for market purposes; the growing of hot house lambs. Also practical exercises in judging the various breeds. Elective for Two Year Agricultural Students, Second Year.

Three exercises per week. 1st S.

33. Feeds and Feeding.

Similar to An. Husb. 3. For Two Year Agricultural Students, Second Year.

Three exercises per week. 2nd S.

34. Animal Breeding.

Similar to An. Husb. 2. Elective for Two Year Agricultural Students, Second Year.

Three exercises per week. 2nd S.

35. Veterinary.

Similar to An. Husb. 4. Elective for Two Year Agricultural Students, Second Year.

Three exercises per week. 2nd S.

36. Poultry.

Similar to An. Hus. 5. Elective for Two Year Agricultural Students, Second Year.

Two exercises per week. 2nd S.

BOTANY.

PROF. BROOKS, MR. LEWIS.

31. Elements of Botany.

A general view of the life processes and structure of plants, followed by the study in detail of a few type forms. Recitations and laboratory work. For Two Year Agricultural Students, First Year.

Three exercises per week. 1st S.

32. Plant Diseases.

A study of the more important fungous diseases and their prevention. Lectures, recitations and laboratory work.

Open only to students who have completed Course 1.

Three exercises per week. 2nd S.

CHEMISTRY.

PROF. MORSE.

31. Elementary Applications.

An elementary course, with special reference to the elements of plant food, composition of fertilizers, elements subject to exhaustion in soils, etc. For Two Year Agricultural Students, First Year.

Two exercises per week. 2nd S.

DAIRYING.

ASSOC. PROF. RASMUSSEN.

31. Milk and Milk Testing.

Lectures and recitations on the secretion, composition and properties of milk, the Babcock test and lactometer. Comparative

study of different systems of creaming and different factors influencing the efficiency of the hand separator. For Two Year Agricultural Students, First Year.

Three exercises per week. 2nd S.

32. Butter Making.

This includes pasteurization, commercial starters, cream ripening, churning, marketing and scoring butter. Elective for Two Year Agricultural Students, Second Year.

Three exercises per week. 1st S.

33. Technology of Milk.

Same as Course 3. Elective for Two Year Agricultural Students, Second Year.

Two exercises per week. 2nd S.

DRAWING.

31. Two Year Agricultural Students, Second Year.

One exercise per week. 1st S.

ENGLISH.

31. Grammar and Elementary Composition.

For Two Year Agricultural Students, First Year.

Three exercises per week. 1st S.

32. Grammar and Composition.

This is a continuation of Course 31. For Two Year Agricultural Students, First Year.

Open only to students who have completed Course 31.

Three exercises per week. 2nd S.

FORESTRY.

31. Farm Forestry.

Method of reproduction, seed collecting, thinning, determination of heights, contents and increment of forest trees. For Two Year Agricultural Students, First Year.

Two exercises per week. 2nd S.

32. Arboriculture and Forestry.

Elective for Two Year Agricultural Students, Second Year.

Three exercises per week. 2nd S.

HORTICULTURE.

31. Vegetable Gardening.

A study of the commercial methods of vegetable growing. Special attention is given to the home garden. For Two Year Agricultural Students, First Year.

Three exercises per week. 1st S.

32. Fruit Growing.

This course embraces a study of commercial orcharding; each fruit being studied with reference to planting, cultivating, pruning, fertilizing, picking, packing, storing and marketing. For Two Year Agricultural Students, Second Year.

Three exercises per week. 1st S.

33. Plant Growth and Greenhouse.

Combined lecture, demonstration and laboratory course in plant growth and greenhouse management. Elective for Two Year Agricultural Students, Second Year.

Three exercises per week. 1st S.

34. Home Decoration.

A study of ornamental trees, shrubs and flowers; their culture, proper arrangement and decorative value, with special reference to home surroundings. Elective for Two Year Agricultural Students, Second Year.

Three exercises per week. 2nd S.

MATHEMATICS.

MR. EASTMAN.

31. Arithmetic and Bookkeeping.

For Two Year Agricultural Students, First Year.

Three exercises per week. 1st S.

MILITARY SCIENCE AND TACTICS.

CAPT. HUNT.

1. Military Drill.

For Two Year Agricultural Students, First Year.

Two exercises per week. 1st S.

2. Military Drill.

For Two Year Agricultural Students, First Year.

Two exercises per week. 2nd S.

3. Military Drill.

For Two Year Agricultural Students, Second Year.

Two exercises per week. 1st S.

4. Military Drill.

For Two Year Agricultural Students, Second Year.

Two exercises per week. 2nd S.

9. Infantry Drill Regulations.

Practical instruction and lectures. For Two Year Agricultural Students, First Year.

One exercise per week. 1st S.

10. Manual of Guard Duty and Small Arms Firing Regulations.

For Two Year Agricultural Students, First Year.

One exercise per week. 2nd S.

17. Lectures on Advance Guards, Outposts, etc.

For Two Year Agricultural Students, Second Year.

One exercise per week. 1st S.

18. Lectures on Advance Guards, Outposts, etc.

Continuation of Course 17. For Two Year Agricultural Students, Second Year.

One exercise per week. 2nd S.

PHYSICS.

PROF. NESBIT.

31. Elementary Physics.

For Two Year Agricultural Students, Second Year.

Four exercises per week. 1st S.

SHOP WORK.

31. Wood Work. Mr. Ingham.

For Two Year Agricultural Students, First Year.

Two exercises per week. 2nd S.

32. Iron Work. Mr. Brown.

For two Year Agricultural Students, Second Year.

Two exercises per week. 2nd S.

ZOOLOGY.

31. Vertebrate Anatomy and Physiology.

The anatomy and physiology of the higher vertebrates based upon that of man and with special reference to domestic animals.

Recitations and laboratory dissections and experiments. For Two Year Agricultural Students, First Year.

Three exercises per week. 1st S.

32. Elementary Entomology.

The structure, habits and classification of insects, with special consideration of injurious pests and means of controlling them. For Two Year Agricultural Students, First Year.

Three exercises per week. 2nd S.

COURSES OF STUDY AND SCHEDULE OF HOURS.

First Year.

FIRST SEMESTER.

		Credit hours.
Agronomy 31	Elementary Agriculture	3
Botany 31	Elements of Botany	3
English 31	Grammar and Elementary Composition	3
Horticulture 31	Vegetable Gardening	3
Mathematics 31	Mathematics and Bookkeeping	3
Military Science 1	Drill	1
Military Science 9	Infantry Drill Regulations	1
Zoology 31	Vertebrate Anatomy and Physiology	3

SECOND SEMESTER.

Botany 32	Plant Diseases	3
Chemistry 31	Elementary Applications	2
Dairying 31	Milk and Milk Testing	3
English 32	Grammar and Composition	3
Forestry 31	Farm Forestry	2
Military Science 2	Drill	1
Military Science 10	Manual of Guard Duty	1
Shop Work 31	Wood Work	2
Zoology 32	Economic Entomology	4

Second Year.

FIRST SEMESTER.

Agronomy 32	Farm Equipment and Farm Crops	3
An. Husb. 31	Breeds of Livestock	3

		Credit hours.
**An. Husb. 32*	Sheep Raising	3
**Dairying 32*	Butter Making	3
Drawing 31		1
Horticulture 32	Fruit Growing	3
**Horticulture 33*	Plant Growth and Greenhouse	3
Military Science 3	Drill	1
Military Science 17	Advance Guards, Outposts, etc	1
Physics 31	Elementary Physics	4

SECOND SEMESTER.

Agronomy 33	Soils and Soil Physics	3
Agronomy 34	Manures and Fertilizers	2
An. Husb. 33	Feeds and Feeding	3
**An. Husb. 34*	Animal Breeding	3
**An. Husb. 35*	Veterinary Science	3
**An. Husb. 36*	Poultry	2
**Dairying 33*	Technology of Milk	2
**Forestry 32*	Arboriculture and Forestry	3
Horticulture 34	Home Decoration	3
Military Science 4	Drill	1
Military Science 18	Advance Guards, Outposts, etc	1
Shop Work 32	Iron Work	2

* Elective. Elect any one or two.

TWO YEAR COURSE IN AGRICULTURE—FIRST YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	English 31	Agronomy 31	†Mathematics 31	†Military Sci. 1	Horticulture 31
	Tuesday		Military Sci. 9	Horticulture 31	Botany 31	Zoology 31
	Wednesday	English 31	Agronomy 31	Mathematics 31	Zoology 31	Botany 31
	Thursday		Horticulture 31		Zoology 31	
	Friday	English 31	Agronomy 31	†Mathematics 31	†Military Sci. 1	Botany 31
	Saturday					
SECOND SEMESTER	Monday	English 32	Chemistry 31	†Forestry 31	†Military Sci. 2.	Botany 32
	Tuesday	Shop 31	Shop 31	Shop 31	Shop 31	Zoology 32
	Wednesday	English 32	Chemistry 31		Zoology 32.	Forestry 31
	Thursday	Dairying 31	Dairying 31	Dairying 31	Botany 32	Zoology 32
	Friday	English 32	Military Sci. 10	†Dairying 31	†Military Sci. 2	Botany 32
	Saturday	Dairying 31	Dairying 31	Dairying 31	Zoology 32	

†These periods are transposed from December 1 to March 31.

TWO YEAR COURSE IN AGRICULTURE—SECOND YEAR

FIRST SEMESTER

DAY	8–9	9–10	10–11	11–12	P. M.
Monday	An. Husb. 32 *Horticulture 33	Horticulture 32	†*Dairying 32	†Military Sci. 3	An. Husb. 31
Tuesday	*Dairying 32	*Dairying 32	Agronomy 32	Physics 31	*Horticulture 33
Wednesday	*Horticulture 33	Horticulture 32	An. Husb. 31	Physics 31	Agronomy 32
Thursday	*An. Husb. 32	*An. Husb. 32	Agronomy 32	Physics 31	Drawing 31
Friday	Military Sci. 17	*An. Husb. 32	†An. Husb. 31	†Military Sci. 3	Horticulture 32
Saturday	*Dairying 32	*Dairying 32	*Dairying 32	Physics 31	

SECOND SEMESTER

Monday	Agronomy 34	*An. Husb. 35	†Agronomy 33	†Military Sci. 4	*Forestry 32 *An. Husb. 36
Tuesday	Military Sci. 18	*An. Husb. 34	Agronomy 33		*Dairying 33
Wednesday	Agronomy 34	*An. Husb. 35 *Horticulture 34		*Forestry 32	Agronomy 33
Thursday	Shop 32	Shop 32	Shop 32	Shop 32	An. Husb. 33
Friday	An. Husb. 33	*Horticulture 34 *An. Husb. 34	†	†Military Sci. 4	*Horticulture 34 *An. Husb. 35
Saturday	An. Husb. 33	*Dairying 33 *An. Husb. 34	*Dairying 33	*Forestry 32 *An. Husb. 36	

* Elective.

†These periods are transposed from December 1 to March 31.

TEN WEEK COURSE IN DAIRYING OR DAIRY SCHOOL.

OPENING.

The Fourteenth Annual Dairy School of the New Hampshire College opens Tuesday, January 5, and closes Friday, March 13. Students should present themselves for registration at Thompson Hall the first day of the session. Lectures and laboratory work begin the following day.

ADMISSION.

The school is open to men and women sixteen years of age and upward. No entrance examination is required. However, in order to make the best use of the instruction, the student should have a good common school education. The experiences of previous years have shown that the subect in which the student is most deficient is arithmetic, especially percentage and decimals. Both of these divisions of arithmetic are used to a large extent in solving problems in the creamery and also in computing rations for the dairy cow. It is therefore well for those planning to take the dairy course to review these subjects before entering. To be most benefited by the school, the students should have had some practical experience on a farm or in a creamery.

EXPENSES.

A tuition fee of five dollars is payable on registering at the beginning of the term; other expenses, including books, white suits, and room and board for ten weeks, amount to approximately sixty dollars.

CERTIFICATES.

Students completing the required work of the dairy school, and passing satisfactory examinations, will be given certificates.

DESCRIPTION OF SUBJECTS.

Associate Professor W. H. PEW.

Agriculture 42. Breeds of Dairy Cattle.

Lectures and recitations upon the origin, history, distribution, characteristics, adaptability and standard of excellence of the pedigreed breeds of cattle, with special reference to the selection

of breeds and individual animals for the herd. This subject will be studied four hours per week for the first five weeks. The practical work will consist of scoring and judging representatives of the various breeds of dairy cattle, and in tracing pedigrees of animals in the herd books of the different breeds.

Professor FRED W. MORSE.

Agriculture 43. Chemistry of Dairy Products.

The subject is taken up in a course of eight lectures, illustrated by experiments and specimens, and includes the properties and separation of the different constituents of milk, fat, casein, albumen, sugar, etc., the composition of butter and butter-fat, and the properties and effects of preservatives.

Associate Professor W. H. PEW.

Agriculture 44. Diseases of Cattle.

This course will consist of eight lectures and recitations upon the anatomy and physiology of the cow, with special reference to the digestive, reproductive and milk-producing organs. The common diseases, their causes and the methods of treatment will be discussed.

Agriculture 45. Feeds and Feeding.

Lectures and recitations upon the composition and digestibility of feeding stuffs, the preservation of coarse fodders, the making and feeding of ensilage, and the grinding, steaming and cooking of feed. A careful study will be made of the different grains and feeds, and their value in a ration for dairy cows. Practice will be given in computing rations for the dairy cow.

Professor F. W. TAYLOR.

Agriculture 50. Forage and Silage Crops.

This course will consist of ten lectures upon forage and silage crops which are suited for New Hampshire conditions. The matter of varieties, preparation of the ground, time of seeding, amount of seed, harvesting and storing will be discussed. Soiling crops, the construction of silos and the growing of crops for the silo will be treated in as much detail as the time allows.

Associate Professor FRED RASMUSSEN.

Dairying 40. Butter Making.

Lectures and recitations on the different systems of creaming milk and a comparison of the efficiency of different cream separ-

ators under varying conditions; cream ripening, churning, washing, marketing and scoring of butter.

Dairying 41. Dairy Bacteriology.

Lectures and demonstrations on the functions of bacteria and the application of bacteriological principles to dairy work, such as pasteurization, cream ripening, commercial starters, and deterioration of butter.

Dairying 42. Dairy Laboratory.

The equipment in the dairy building is such that the laboratory work can be made applicable both to farm and factory conditions. The student will have an opportunity to study construction and efficiency, and operation of the various machines used in the handling of milk and making of butter. The use of the Babcock test in apportioning the money value of milk is now regulated by state law, and the importance of the test in the successful management of the dairy herd has created a demand for more complete and practical training. The details of the test will be studied carefully, and the student will practice testing milk, cream, skim-milk and butter-milk until fully competent to perform the work for himself or for others.

Dairying 44. Milk and Milk Testing.

This course will consist of the study of secretion, the physical and chemical properties of milk; the production and preparation of sanitary, certified and modified milk, the various methods of sampling and testing milk and cream, and the detection of adulterants and preservatives.

Mechanical Engineering 40. Boilers and Engines.

Lectures will be given on the construction, operation and care of boilers, motors, steam and gasoline engines. The lectures will be followed by practical demonstration and practice in the management of the various motive powers. Instruction and practice will also be given in pipe cutting and fitting, and other work incidental to the management of a steam plant. The course will consist of a two-hour period once a week for the ten weeks.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

Most of the Agricultural Experiment Stations of the various states, including that of New Hampshire were founded in 1888 by an act of Congress, approved March 2, 1887, known as the

Hatch Act in honor of its author. This act appropriated fifteen thousand dollars ($15,000) annually for the maintenance of an Agricultural Experiment Station in each state. This act provides—

"That it shall be the object and duty of said Experiment Stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural and artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories." The act also provides that the results of such work shall be published in bulletins and reports.

A further endowment of the Experiment Stations to provide specifically for research work was made by the Adams Act passed by Congress and approved March 16, 1906, which provided an increased annual appropriation which amounts to $11,000 for the current fiscal year and increases to $15,000 in 1911-'12. This appropriation is specifically limited to the "necessary expenses of conducting original researches or experiments," and the rulings of the U. S. Department of Agriculture, which is vested with the supervision of the expenditures under this act, require that this appropriation be spent in fundamental investigations or researches to determine the underlying causes and principles of agricultural science, rather than for mere experiments to secure results of immediate practical application as contemplated under the Hatch Act Appropriation. The purposes of the two acts are therefore supplementary but distinct.

The New Hampshire Agricultural Experiment Station is organized as a department of the New Hampshire College of Agriculture and Mechanic Arts, and is administered by a Board of Control, elected by its Board of Trustees.

The publications of the station comprise 139 bulletins of the regular series and seven circulars. The bulletins are issued at irregular intervals and are sent to all residents of New Hampshire requesting them. Back numbers will be sent as long as the supply lasts.

The station is prepared to give advice and assistance to the farmers of New Hampshire along the following lines:

The maintenance of soil fertility, including the rotation of crops and the selection and use of manures and fertilizing materials.

The selection of varieties of grains, grasses and forage crops and methods of culture.

The selection of varieties of fruits and vegetables and the management of orchards.

The examination of seeds that are suspected of being unsound or adulterated; the identification of grasses, weeds and other plants; the prevention of fungous diseases of plants.

The identification of insects and the control of such as are injurious.

The feeding of animals, including calculation of rations and use of various feeding stuffs.

The methods of milk production, creamery and dairy methods and machinery and the scoring of dairy products.

The testing of milk to determine the value of dairy cows.

The planting and care of forest trees and the management of farm wood lots.

Any citizen of New Hampshire has the right to apply to the station for such assistance as it can give, and all such requests will be given prompt attention.

COMMENCEMENT 1908.

On Commencement Day, June 3, 1908, the following degrees were conferred:

BACHELORS OF SCIENCE.

Agriculture.

Carlisle, Lawrence A., Exeter.
Farwell, Oren L., Chesham.
Sanborn, Moses H., Fremont.
Waite, George L., Dunbarton.

Chemistry.

Evans, Walter W., E. Kingston.
French, Harry F., Plymouth.
Perley, George A., Goffstown.

Electrical Engineering.

Barton, Arthur Hosea, Newport.
Batchelder, Arthur M., Suncook.
Buss, Minot G., Wilton.
Clough, Francis, Contoocook.
Cone, Charles F., Nashua.
Cory, Merton M., Nashua.
Huse, Merrit C., Concord.
O'Connor, John J., Portsmouth.
Priest, James H., Manchester.
Walker, Harold D., Kittery, Maine.

General.

Chesley, Mary C., Durham.
DeMeritt, Katharine, Durham.
Page, John C., Dover.
Pettee, Sarah E., Durham.

Mechanical Engineering.

Croghan, John T., Concord.
Kirkpatrick, William R., Nashua.
Smalley, Dean F., Walpole.
Tarbell, Carl B., Milton.
Wadleigh, Ray E., Kensington.

Unclassified.

Adams, Waldo L., Townsend, Mass.
Cash, James D., Massabesic.
Hill, Stanley F., Nashua.
Woodman, Francis W., W. Derry.

Certificates.

Holmes, George A., Langdon.
Leavitt, Guy, Sanbornton.
Littlefield, Harold T., Salem Depot.

PRIZE RECORD FOR 1908.

BAILEY PRIZE—$10.

Given by Dr. C. H. Bailey of the Class of '79, and E. A. Bailey of the Class of '85.

George Arthur Perley, Goffstown.

ERSKINE MASON MEMORIAL PRIZE.

George Arthur Perley, Goffstown.

SENIOR STANDING HIGHEST IN THE MILITARY DEPARTMENT.

John Timothy Croghan, Concord.

WINNERS OF INDIVIDUAL PRIZE DRILL.

GOLD MEDAL.

John Worthen Davis, '11, Concord.

SILVER MEDAL.

Charles F. Whittemore, '11, Pembroke.

HONORABLE MENTION.

Charles Hubert Locke, '11, Wakefield, Mass.

PRIZE SWORD—EXCELLENCE IN DRILL.

Harold Hartshorn Wilkins, '09, Amherst.

HONORABLE MENTION.

Carl Duncan Kennedy, '09, Concord.

SENIORS REPORTED TO ADJT.-GENERAL, U. S. ARMY, FOR APTITUDE IN DRILL.

John Timothy Crogan, Concord.
Merritt Chase Huse, Concord.
Harold Duncan Walker, Kittery, Me.

COLOR COMPANY—FALL TERM.

Company B.

VALENTINE SMITH SCHOLARSHIPS.

William S. Campbell, '09.
Edward D. French, '10.
Earle B. Jennings, '11.
Philip L. Gowen, '12.

ROSTER OF BATTALION.

For 1908—'09.

COMMANDANT.

Captain William E. Hunt, Twenty-Second U. S. Infantry.

CADET OFFICERS.

Major C. D. Kennedy.
First Lieut. and Adjt. L. S. Morrison.
First Lieut. and Q. M. H. E. Wilder.
Sergt. Maj. C. S. Wright.
Q. M. Sergt. H. P. Corliss.
Color Sergt. C. E. Lawrence.
Drum Major W. F. Langelier.

COMPANY A.

Capt. H. H. Wilkins,
1st Lt. R. A. Neal.
2nd Lt. J. M. Leonard.

COMPANY B.

Capt. L. L. Smalley.
1st Lt. C. Chase.
2nd Lt. H. P. Corson.

COMPANY C.

Capt. L. A. Pratt.
1st Lt. F. O. Chase.
2nd Lt. A. E. Blake.

FIRST SERGEANTS.

E. H. Burroughs.
O. F. Bryant.
H. C. Read.

SERGEANTS.

C. L. Perkins.
G. B. Hefler.
C. H. Swan.
S. T. Hoyt.
L. H. Burns.
D. W. Anderson.
W. W. Burroughs.
E. D. French.
H. W. Neal.
B. W. Proud.
H. T. Converse.
G. H. Chamberlin.

CORPORALS.

J. H. Bachelder.
P. J. Burbeck.
R. E. Carpenter.
L. E. Pierce.
C. F. Whittemore.
F. G. Fisher.
B. F. Proud.
L. W. Bennett.
E. E. Stark.
J. W. Davis.
C. W. Kemp.
W. H. Quimby.

MUSICIANS.

H. W. Tenney. W. D. Kidder.
D. Boynton.

BAND.

1st Lt. J. P. Trickey. Sergeant C. S. Richardson.
Sergeant O. D. Goodwin. Corporal C. W. Kelley.
Sergeant P. F. Ellsworth. Corporal S. N. Wentworth.
Sergeant J. E. Parker. Corporal W. Morrill.

STUDENTS.

a—Agricultural Course; *c*—Course in Technical Chemistry; *g*—General Course; *m e*—Mechanical Engineering; *e e*—Electrical Engineering; *u*—Unclassified. Freshmen in the Engineering Courses are designated by *e* only.

GRADUATE.

Name.	Residence.
Hayes, Warren Chauncey	*Durham.*

SENIORS.

Name.	Residence.
Ackerman, Lawrence Day *c*	*Bristol.*
Brown, Edna Olive *g*	*Rye Beach.*
Campbell, William Smith *e e*	*Litchfield.*
Doe, Marion *g*	*Durham.*
Ellsworth, Perry Foss *e e*	*Meredith.*
Falconer, John Ironside *a*	*Milford.*
Fellows, Ernest Roslyn *e e*	*Exeter.*
Goodwin, Otis Dana *e e*	*Hollis.*
Kelley, Charles William *m e*	*Barnstead.*
Kennedy, Carl Duncan *c*	*Concord.*
Lougee, Bernard Ayers *e e*	*Pittsfield.*
McKone, Frank E. *e e*	*Dover.*
Merrill, Maurice David *e e*	*Andover.*
Parker, John Edward *a*	*Goffstown.*
Peaslee, Albert *m e*	*Gonic.*
Pike, Herbert Samuel *m e*	*Lisbon.*
Pratt, Lester Albert *c*	*Alton Bay.*
Quimby, Harold Wallace *m e*	*Northwood Narrows.*
Richardson, Charles Sidney *m e*	*Cornish Center.*
Sargent, George Jackman *c*	*Concord.*
Smalley, Lee Lawrence *m e*	*Walpole.*
Stevens, Ernest Morton *m e*	*Andover.*
Stokes, Iva Dorothy *g*	*Epsom.*
Townsend, Harry Storrs *a*	*Lebanon.*
Wendell, Chester Snell *e e*	*Dover.*
Wilder, Howard Erwin *m e*	*Amesbury, Mass.*
Wilkins, Harold Hartshorn *m e*	*Amherst.*
Woods, Arthur Page *m e*	*Bath.*

JUNIORS.

Name.	Residence.
Anderson, David Wadsworth *a*	*Manchester.*
Batchelder, Henry Edward *m e*	*Exeter.*
Bills, Frank Hartwell *e e*	*Reed's Ferry.*
Blake, Alfred Edward *c*	*Nashua.*
Boynton, Dalton *e e*	*Little Boar's Head.*
Bryant, Orville Frank *c*	*Ashland.*
Burroughs, Edgar Herbert *m e*	*Sanbornville.*
Burroughs, Wilbur Warren *m e*	*Sanbornville.*
Chamberlin, George H. *e e*	*Woodsville.*
Chase, Fred Odell *m e*	*Warner.*
Converse, Henry *a*	*Amherst.*
Corliss, Harry Percival *c*	*Wolfeboro.*
Corson, Harry Peach *c*	*Laconia.*
Drew, Lucy Abby *g*	*Colebrook.*
Emery, Roland Chester *e e*	*Hampton.*
French, Edward Daniel *e e*	*So. Hampton.*
Hefler, George Burpee, *m e*	*Jackson.*
Hoyt, Simes Thurston *m e*	*Newington.*
Langelier, Wilfred F. *c*	*Nashua.*
Lawrence, Cheney E. *m e*	*Nashua.*
Leonard, James Mortimer *e e*	*Woodsville.*
Morrison, Leonard S. *g*	*Penacook.*
Neal, Haldimand W. *e e*	*Dover.*
Neal, Robert A. *e e*	*Dover.*
Peel, Charles Edward *c*	*Nashua.*
Perkins, Clement Linwood *c*	*Berwick, Me.*
Read, Harold Clifford *e e*	*Westport.*
Sanborn, Edson Dana *a*	*Fremont.*
Scammon, Raymond Brewster *m e*	*Stratham.*
Thorp, Theron A. *e e*	*Exeter.*
Trickey, John Paul *c*	*Rochester.*
Wells, Burleigh Ray *e e*	*Somersworth.*
Wood. Chester Loring *u*	*Dudley, Mass.*

SOPHOMORES.

Name.	Residence.
Abbott, Harold Vincent *m e*	*Derry.*
Arozian, Ohannes A. *c*	*Nashua.*
Bachelder, John Hutchins *a*	*Concord.*
Bennett, Leland Wilson *e e*	*Laconia.*
Brackett, Thomas James *a*	*Greenland.*
Brown, Albert H. *a*	*Strafford.*
Brown, Charles O. *c*	*Concord.*
Burbeck, Perry James *e e*	*Haverhill.*
Burns, Lucian H. *a*	*Milford.*
Carpenter, Roy Elbert *e e*	*Medford, Mass.*
Chase, Carl *g*	*Webster.*
Clark, Maurice C. *m e*	*Marlboro.*
Colby, Arthur S. *a*	*Tilton.*
Cotton, Arthur Clyde *g*	*Alton.*
Davis, John Worthen *m e*	*Concord.*

Name.	Residence.
DeMerritt, Margaret *g*	*Durham.*
Drew, Mariette Alice *g*	*Colebrook.*
Easterbrook, Ralph Lewis *a*	*Dudley, Mass.*
Fisher, Frank Gordon *a*	*Woburn, Mass.*
Gaddas, Sumner Felt *e e*	*Hillsboro.*
Gove, Willis Ansel *m e*	*Laconia.*
Hammond, Roland Bowman *g*	*Nashua.*
Hardy, Harold Elwin *a*	*Hollis.*
Hatch, Olive Estelle *g*	*Dover.*
Holmes, Harry Wesley *e e*	*Northwood.*
Jennings, Earle B. *e e*	*Winchester.*
Judkins, Henry Forrest *a*	*Kingston.*
Kemp, Charles W. *a*	*Kingston.*
Kennedy, Frank Paul *g*	*Dover.*
Kidder, Walter Dennis *e e*	*Manchester.*
Little, Webb *g*	*Compton.*
McLucas, Charles Abraham *m e*	*Nashua.*
Morrill, Frank Whitcomb *g*	*Walpole.*
Morrill, Winfred *m e*	*Pike.*
Nason, Carl Eastman *e e*	*Concord.*
Parker, Edward Gookin *c*	*Portsmouth.*
Parker, William Folger *e e*	*Goffstown.*
Pease, Bret *e e*	*Ashland.*
Philbrook, Henry Brown *g*	*No. Hampton.*
Pierce, Leonard Emerson *e e*	*Worcester, Mass.*
Proud, Benjamin Franklin *m e*	*Manchester.*
Proud, Brenton W. *e e*	*Manchester.*
Quimby, Waldo Hutchinson *e*	*Concord.*
Reynolds, Clearton Howard *c*	*Middletown, N. Y.*
Roberts, George Filmore *a*	*Alton.*
Robinson, Charles Harrison *c*	*Marlboro.*
Scott, Bessie Amanda *g*	*Tyson, Vt.*
Stark, Eldon Eugene *e e*	*Haverhill.*
Swan, Clyde Henry *g*	*Keene.*
Tenney, Harry William *e e*	*Newport.*
Towne, Ernest George *m e*	*Thornton.*
Tucker, James William *g*	*Concord.*
Wentworth, Stephen Neal *g*	*Rochester.*
Whittemore, Charles F. *c*	*Pembroke.*
Wilkins, Aaron Wallace *m e*	*Amherst.*
Wilkins, Carroll Blaisdell *g*	*Nashua.*
Wright, Charles Shannon *a*	*Portsmouth.*
Wyman, Horace Chester *a*	*Manchester.*

FRESHMEN.

Name.	Residence.
Bailey, Thomas Craig *e*	*New Boston.*
Batchelder Roy Eugene *e*	*Sugar Hill.*
Bates, Everett Heath *e*	*Dudley, Mass.*
Berry, George Wesley *a*	*Stratham.*
Bradford, Maurice P. *e*	*Derry.*
Brown, Milward W. *e*	*Hillsboro.*

Name.	Residence.
Buckminster, Paul D. *e*	*Haverhill, Mass.*
Bunker, Lewis L. H. *e*	*Durham.*
Casci, Alfred J. *e*	*Concord.*
Catlin, Harwood B. *e*	*Hill.*
Chamberlain, Walter E. *a*	*Sugar Hill.*
Chase, Earle H. *e*	*Newport.*
Chase, William Hosea *e*	*Newport.*
Cole, Florence Viola *g*	*Dover.*
Davis, Arthur G. *a*	*Peterboro.*
Davison, Frank S. *a*	*Durham.*
DeMerritt, Stephen *e*	*Durham.*
Donnelly, Edith G. *g*	*Dover.*
Drake, George Lincoln *e*	*Antrim.*
Duncan, Raymond C. *e*	*Alton.*
Eastman, Wesley Edward *a*	*E. Andover.*
Foster, Leland S. *e*	*Newport.*
Garland, John A. *a*	*Hampstead.*
Gowen, Philip Lewis *e*	*Stratham.*
Harding, Daniel Pearl *g*	*New Durham.*
Hargraves, Fred Forest *e*	*Nashua.*
Hayes, Bernice M. *g*	*Durham.*
Hoben, Frank M. *c*	*Concord.*
Holden, H. Chester *e*	*Manchester.*
Hood, Leslie Newton *e*	*Nashua.*
Hooke, Lyman S. *a*	*Fremont.*
Huse, Oscar E. *a*	*Newton Junction.*
Johnson, Maurice Lingard *g*	*Nashua.*
Knight, Ray H. *a*	*Marlboro.*
Leighton, Alan *g*	*Concord.*
Leighton, Arthur John *e*	*Laconia.*
Lovell, Roscoe Ernest *e*	*Portsmouth.*
Lowd, Clarence Mortimer *e*	*Clinton, Mass.*
McPheters, George A. *e*	*Portsmouth.*
Manter, Jerauld A. *e*	*Manchester.*
Merrill, Karl E. *e*	*Hudson.*
Morgan, Ralph Clifford *e*	*Concord.*
Neal, Cecil Maurice *e*	*Portsmouth.*
O'Malley, Michael J. *e*	*Somersworth.*
Page, William E. *e*	*Haverhill.*
Parker, Harry Stinson *e*	*Goffstown.*
Payne, Chauncey W. *e*	*Hill.*
Perkins, Harold Wilbur *e*	*Dover.*
Perkins, Irving C. *e*	*Kennebunkport, Me.*
Pettingill, James B. *e*	*Dover.*
Phillips, Paul Milton *a*	*Nashua.*
Reynolds, Roland E. *e*	*W. Upton, Mass.*
Riley, Martin E. *e*	*Somersworth.*
Robinson, John E. *e*	*Pembroke.*
Rogers, William Edward *e*	*Medford, Mass.*
Sawyer, Arthur H. *a*	*Atkinson.*
Sawyer, Howard Symmes *e*	*Woodstock.*
Scott, Charles Field *g*	*Durham.*

Name.	Residence.
Shapleigh, Edward Eugene *e*	*Kittery, Me.*
Shaw, Wyman Robinson *a*	*Strafford.*
Skinner, Russell E. *a*	*Colebrook.*
Smart, Guy *e*	*Rochester.*
Stevens, Ernest C. *a*	*Buffalo, N. Y.*
Sughrue, Timothy G. *g*	*Nashua.*
Tappan, Albert D. *e*	*North Woodstock.*
Taylor, Alexander *a*	*Bedford.*
Thompson, Ruth E. *g*	*Durham.*
Towle George Wesley *e*	*Newmarket.*
Tucker, Herbert R. *g*	*Concord.*
Tucker, Raymond Hodgdon *e*	*Berlin.*
Tuttle, Harry Benjamin *a*	*Atkinson.*
Waldron, Jeremy R. *e*	*Farmington.*
Warner, William Pearl	*Plaistow.*
Watson, Myles S. *a*	*Durham.*
Whittemore, Hollie L. *e*	*Colebrook.*
Wood, Arthur G. *e*	*Atkinson.*

TWO YEAR COURSE.

Second Year.

Name.	Residence.
Colburn, Luther Dodge	*New Boston.*
Barber, Frank W.	*Durham.*
Hill, Claudian F.	*Wakefield.*
Martin, Leslie Chapin	*Chicopee, Mass.*
Melkonian, James	*Alton.*
Townsend, Hugh	*Lebanon.*
Waite, Iru Merrill	*Goffstown.*
Wheeler, Harry F.	*Salem Depot.*

First Year.

Avery, Walter J.	*Laconia.*
Benner, Andrew W.	*Gonic.*
Bickford, Channing M.	*Rye Beach.*
Buffum, Warren Hodgdon	*Winchester.*
Gilman, Daniel E.	*Exeter.*
Harvey, Vernon C.	*Antrim.*
Hill, Ernest C.	*Strafford.*
Osgood, Wilfred Albro	*Windham Depot.*
Sanborn, Howard W.	*Sanbornton.*
Silver, Bertram E. G.	*Roxbury, Mass.*
Snow, Percy S.	*Nashua.*
Stevens, Henry L.	*Franklin.*
Wallis, William E., Jr.	*Littleton.*
Wheeler, Earle O.	*Weirs.*
Williams, Everett C.	*Worcester, Mass.*
Wiswell, Everett	*Colebrook.*
Woods, Minot W.	*Bath.*

SPECIAL COURSE.

Name.	Residence.
Abbott, Walter Sidney	*Manchester.*
Thomas, Edna	*Thomaston, Conn.*

TEN WEEK COURSE.

Brown, Perley William	*Chester, Vt.*
Cady, Burton Frederic	*Medford, Mass.*
Crockett, Henry Charles	*New London.*
Lane, Oliver Martin	*Keene.*
Rollins, Herbert William	*Concord.*
Stevens, Henry Lee	*Franklin.*
Wheeler, William John	*Antrim.*
Woodbury, F. P.	*Newburyport, Mass.*

SUMMARY.

Graduate	1
Seniors	28
Juniors	33
Sophomores	58
Freshmen	76
Students in Ten Week Course	8
Students in Two Year Course	25
Special Students	2
Total	231

REGISTER OF GRADUATES

NOTE.—The arrangement is: (*a*) Name in full. (*b*) Later degrees taken. (*c*) Residence at time of entering college. (*d*) Occupation, etc. (*e*) Present residence. *Dead. †Present address unknown. Graduates are earnestly requested to inform the registrar of any changes that should be made in this list.

DOCTOR OF SCIENCE.

Ned Dearborn, D. Sc., 1901. Asst. Curator of Birds, Field Museum of Natural History. *Chicago, Ill.*

MASTER OF SCIENCE.

Albert Conradi, M. S., 1902. B. Sc., (Ag.) O. S. U., 1901. Prof. of Zoology and Entomology, Clemson Agricultural College, *Clemson, S. C.*

John L. Randall, M. S., 1906. See class of 1905.

William O. Robinson, M. S., 1906. See class of 1905

Lewis H. Kenney, M. E., 1906. See class of 1899.

John D. Clark, M. S., 1907. See class of 1906.

BACHELORS OF SCIENCE.

1871.

William Preston Ballard, Concord. Farmer.
R. F. D., Route 1, Concord.
Lewis Perkins. Hampton. Retired. *Hampton.*
Charles Henry Sanders, Penacook. Merchant. *Main St., Penacook.*
3—

1872.

Edwin Bartlett, Bath. Farmer. *Spearville. Ford Co., Kansas.*
Frank Alexander White, Bow. Surveyor, Farmer.
Route 4. Concord.

1873. 2—

†Frederick Erasmus Eldredge, Kensington,
James Fred Smith. A. B., A. M., Dartmouth, 1885; A. M.. Stanford, 1900. Principal of High School.
43 McCoy Ave., Campbell, Cal.
Charles Henry Tucker, Plaistow. Woodworker.
24 Highland St., Amesbury, Mass.
3—

1874.

Millard Fillmore Hardy, Rev., Nelson. Graduated Theo. Inst., Ct., 1878. Clergyman. *East Jaffrey.*
*Henry Abbott Sawyer, North Weare.
2—*1

1875.

Walton Herman Aldrich, M. D., Univ. N. Y. City. 1880; Troy. Physician and Surgeon. *Marlborough.*
†Frank Pierce Curtis. Grocer. *Fitchburg, Mass.*
Frank Veranus Emerson. Lebanon. Manager Axe Mfg. Plant.
Masconia Terrace, East Lebanon.
Charles Webster Hardy, M. D.. Mo. Med. Coll., 1881; Marlboro. Physician and Surgeon. *201 So. Main St., Ottawa, Kansas.*
Harvey Jewell, Winchester. Fruit Grower and Poultryman.
R. F. D. 1, Cromwell, Conn.
*Charles Ormille Leavitt, Lebanon.
*John Loney McGregor, D. D. S., Phila. Dental Coll., 1877, M. D. Dartmouth, 1883; Whitefield.
Eliel Peck, Lebanon, Postmaster.
Kimball, Stearns County, Minn.
Ira William Ramsey, Walpole. *Walpole.*
Orlando Leslie Seward, Keene. Artist. *287 Church St., Keene.*

Emery Mason Willard, Harrisville. Druggist, 15 Union Street, Boston, Mass. *109 Hewlett St., Roslindale, Mass.*

11—*3

1876.

Herbert Cyril Aldrich. Troy. Insurance and Real Estate. *329 West 4th St., Los Angeles, Cal.*

†Edmund Lawson Brigham, Jaffrey. Mechanic.

Joseph Warren Butterfield, Westmoreland. Farmer. *North Montpelier, Vt.*

Arthur French Chamberlain, Westmoreland. Partner and New York and Foreign Buyer, of Edson Keith & Co. *132 Michigan Ave., Chicago, Ill.*

Anson Ballard Cross, Holyoke, Mass. Contractor and Builder of Railroads. *Main St., Wilmington, Vt.*

Warren Webster Kimball, Troy. Merchant. *Troy.*

Daniel Deeth Parker, Fitzwilliam. With Heywood Bros. & Wakefield Co. *Box 56, Gardner, Mass.*

7—

1877.

Rollin Kirk Adair, Indian Territory. Retail Groceries. *Chelsea, Indian Ter.*

*Homer Brooks, M. D., N. Y. Hom. Med. Coll., 1881, Franconia.

John Washington Carson, Mont Vernon. Farmer and Land Surveyor. *Francestown.*

*Charles Otto Chubert, Troy.

*Charles Albert Edwards, LL. B., Univ. of Iowa, 1880; Keene.

*William Francis Flint, Richmond.

Clinton Camillus Hall, Westmoreland. Agt. New York Life Ins. Co. *East Westmoreland.*

John Goodrich Henry, M. D., Dartmouth, 1880; Chesterfield. Physician. *15 Pleasant St., Winchendon, Mass.*

*Charles Pitkin Hollister, North Montpelier, Vt.

George Mirick Holman, M. D., Fitchburg, Mass., Teacher. *334 Boylston St., Boston, Mass.*

Charles Appleton Hubbard, Troy. Treasurer United Fruit Company. *Board of Trade Building, 131 State St., Boston, Mass.*

Carlos Augustus Wheeler, East Calais, Vt. Bee Keeper and Farmer. *Bracken, Comal Co., Texas.*

Everard Whittemore, Fitzwilliam. Insurance and Real Estate. *14 River St., Hudson, Mass.*

13—*5

1878.

†Ezra Eastman Adams, Manchester.

*Elmer Kilburn, Marlow.

Charles Edward Record, Fitchburg, Mass. Contractor and Builder. *73 Green St., Leominster, Mass.*

3—*1

1879.

Charles Hardy Bailey, M. D., Dartmouth, 1881. Physician. *89 East Broadway, Gardner, Mass., Station A.*

Richard Clinton Chapin, Chicopee, Mass. With American Writing Paper Company. *Holyoke, Mass.*

*Lucius M. Cragin, Lempster.

*Nathaniel Cutler Holmes, Jaffrey.

Fred Charles Park, Lempster. Traveling Salesman. *6 Essex St., Concord.*

George Henry Wilkins, M. D., N. Y. Hom. Med. Coll., 1883; Amherst. Physician. *324 Walnut St., Newtonville, Mass.*

6—*2

1880.

Charles Harvey Hood, Derry. Milk Business. *2 Benton Road, Somerville, Mass.*

1—

1881.

Edwin Thompson Aldrich, Troy. General Insurance Agent. *Bridgman's Block, Keene.*

Henry Lyman Barnard, Troy. Clerk. *Troy.*

*George Jordan Boardman, Lawrence, Mass.

Edwin Franklin Bristol, Harwinton, Conn. Farmer. *Ascutneyville, Vt.*

Artemas Terald Burleigh, Farmer and Lumber Dealer. *Franklin.*

Frank Dana Ely, Cavendish, Vt. With Vermont Marble Company, Electrician. *6 School St., Proctor, Vt.*

Sanford Eugene Emery, LL. B., Albany Law School, 1886; Proctorsville, Vt. Attorney-at-Law. *Proctorsville, Vt.*

Charles Herbert Hazen, Hartford, Vt. Farmer and Market Gardener. *Bethlehem.*

Frank P. Marston, Hartford, Vt. Real Estate and Insurance. *46 Main St., Hudson, Mass.*

William Augustus Megrath, M. D., Dartmouth, 1886; Cavendish, Vt. Physician. *Loudon.*

Fred Townsend Stanton, Strafford. Farmer.
R. F. D. No. 1, Rochester.

Victor Hugo Stickney, M. D., Dartmouth, 1883; Tyson, Vt. Physician and Surgeon. *Dickinson, N. Dak.*

Samuel Austin Wallace, Ph. G., Boston School of Pharmacy, 1886; West Hartford, Vt. Druggist. *Crookston, Minn.*

George Herbert Whitcher, Strafford. Director of the New Hampshire Agricultural Experiment Station, February 22, 1888 to November 1, 1894; Professor of Agriculture of the New Hampshire College, June, 1887 to November 1, 1894. District Superintendent of Schools, August 1, 1900. *Berlin.*

14—*1

1882.

Harvey Lincoln Boutwell, LL. B., Boston University, 1886; Hopkinton. Attorney-at-Law, 209 Washington Street, Boston, Mass. *37 Pierce St., Malden, Mass.*

Dana Justin Bugbee, North Pomfret, Vt. Mining in Colorado.
North Pomfret, Vt.

*Robert Fletcher Burleigh, M. D., Dartmouth, 1887; Franklin.

La Forrest John Carpenter, Surry. Farmer.
R. F. D. No. 1, Shirley, Mass.

Edwin Preston Dewey, Hanover. City Engineer.
237 Olive Ave., Long Beach, Cal.

George Andrew Loveland, LL. B., University of New York, 1886, Norwich, Vt. Section Director United States Weather Bureau. *1130 So. 20th St., Lincoln, Neb.*

†John Wright Mason, Hanover.

Harlan Addison Nichols, M. D., Derry. Physician and Surgeon.
Care Montezuma Copper Co., Nacozari, Sonora, Mexico.

*Frank Elmer Thompson, Stark.

9—*2

1883.

Elmore Ferdinand Arnold, M. D., University City of New York, 1885; Londonderry, Vt. Physician.
902 Broadway, New York, N. Y.

Frank Landor Bigelow, Proctorsville, Vt. Instructor in Mathematics and Sciences, Goddard Seminary, Barre, Vt., 1883-1886. Business. *Rutland, Vt.*

Frederick Stocks Birtwhistle, Troy. Consulting and Supervising Electrical Engineer.
51 Tucker Bldg., Raleigh, N. C.

Noice D. Bristol, Harwinton, Conn. Photographer.
2665 Medary Ave., Columbus, O.

Frederick Plummer Comings, Lee. Trustee New Hampshire College, 1893-1903. *Lee.*

Frank Harry Follansbee, Canaan. Railway Postal Clerk.
41 Sharon St., West Medford, Mass.

Adams Clark French, M. D., D. O., Franklin Falls. Physician.
231 So. Hayne St., Chicago, Ill.

James Edgar Gay, Tunbridge, Vt. Woolen Manufacturer.
Cavendish, Vt.

Elmer Daniel Kelley, Franklin Falls. Farmer and Business.
445 Central St., Franklin Falls.

Alvah Benjamin Morgan, Canaan. Pharmacist, Stationer and Newsdealer. *Woodstock, Vt.*

William Lincoln Whittier, Deerfield. Foreman of Machine Shop.
121 Rantoul St., Beverly, Mass.

Charles Minot Woodward, Hanover. Teacher, Public Schools.
1620 College Ave., Fort Worth, Texas.
12—

1884.

*Ernest Smith Cummings, Lee.

Fred Carlos Davis, South Reading, Vt. Lawyer, Civil Engineer and Farmer. *123 South St., Springfield, Vt.*

Sylvester Miller Foster, Riverhead, N. Y. *Westport, Conn.*

Herbert Harvey Kimball, M. S., Columbian University, 1900, Hopkinton. Director of Research Work in Solar Radiation, U. S. Weather Bureau. *Washington, D. C.*

Moses Bisbee Mann, Benton. Inspector of Customs.
Custom House, Boston, Mass.

George Milton Moore, Plymouth, Vt. In private business.
Ludlow, Vt.

Ziba Amherst Norris, Lyme. Dealer in Groceries and Provisions, Wholesale and Retail, Dorchester and Cohasset.
587-593 Washington St., Dorchester, Mass.

Edwin Chapin Thompson, Lee. In charge Local Office.
Observation Bldg., LaCrosse, Wis.
8—*1

1885.

George Ellsworth Adams, Weston, Vt. Merchant.
Vernal, Utah.

Ruel Seabury Alden, Lyme. Superintendent of College Farm, 1895-'97. Superintendent Vermont Marble Company's Farms.
Proctor, Vt.

Walter Eugene Angier, C. E., Dartmouth, 1887; West Swanzey. Civil Engineer. *Office, 1750 Monadnock Block, Chicago, Ill.*

Edward Alonzo Bailey, West Swanzey. Chair Maker.
55 Pine St., Keene.

†Phillips Greenleaf Bickford, Lyme.

Andrew Walter Brill, Riverhead, L. I. Clerk North British and Mercantile Fire Insurance Company, 76 Williams Street, New York, N. Y. *Hempstead, N. Y.*

†Paul Cuff Brooks, Boston, Mass.

Frank Jay Emerson, Epping. Civil Service, U. S. Govt.
Box 312, Portsmouth.

Allen Hazen, Wilder, Vt. Consulting Engineer.
103 Park Ave., Cor. 41 St., New York, N. Y.

George Mayo Mullins, Londonderry. Attorney-at-Law.
727 Symes Bldg., 16th and Champa St., Denver, Colo.

Albert Henry Wood, Lebanon. Associate Professor of Agriculture, 1890-'94. Grain Merchant. *Framingham, Mass.*
11—

1886.

Frank Albert Davis, M. B., M. D., Boston University School of Medicine, 1897, 1898; South Lee. Physician.
Hotel Buckminster, Commonwealth Ave. and Beacon Sts. Boston, Mass.

James Ellsworth Harvey, Surry. Photographer.
51 North Main St., Concord.

Belezar Stoianoff Ruevsky, Tirnovo, Bulgarie. Maître au Gymnase de garçon du Government, Tirnovo, Bulgaria.
Termoro, Bulgaria.

Madison Templeton Thurber, M. D., Dartmouth, 1890, Webster. Physician. *85 Savin Hill Ave., Boston, Mass.*

Edward Hills Wason, New Boston. Attorney-at-Law.
142 Main St., Nashua.

George Pillsbury Wood, Lebanon. Draftsman in charge, Bureau of Yards and Docks, Navy Department.
3407 Holmead Place, N. W., Washington D. C.
6—

1887.

William Sprague Currier, Norwich, Vt. Local Forecaster U. S. Weather Bureau, *1631 Nicholas Bldg., Toledo, Ohio.*

Arthur Woodbury Hardy, C. E., Dartmouth, 1889; Hopkinton. Manager Western Sprinkler Risk Association. *240 La Salle St., Chicago, Ill.*

George Albert Sanborn, Rochester. Salesman. *34 Pine St., Rochester.*

Hiram Newton Savage, C. E., Dartmouth; White River Junction, Vt. Member Am. Soc. C. E.; Supervising and Consulting Engineer, U. S. Reclamation Service. *Huntley, Montana.*

Bion Leland Waldron, Strafford. Official in charge U. S. Weather Bureau. *Government Bldg., Hannibal, Mo.*

5—

1888.

*Melvin Burnside Carr, North Haverhill.

Herbert Grant Davis, South Lee. General Manager Sea View Railroad Company and Narragansett Pier Electric Light & Power Company. *Narragansett Pier, R. I.*

Edwin Chandler Gerrish, Webster. Assistant Paymaster and Long Distance Farmer. *66 Broadway, Lowell, Mass.*

†William Nelson Hazen, C. E., Dartmouth, 1890. Chief Draftsman for the Structural Iron and Steel Co., Bush Street and B. & O. R. R. *Pittsburg, Penn.*

Edward David O'Gara, Hanover. Farmer. *Hanover.*

George Elmer Porter, M. D., Dartmouth, 1892; Hartford, Vt. Physician and Chemist. *Warehouse Pt., Conn.*

George Jonathan Sargent, Canterbury. Civil Engineer and Contractor. *Canterbury.*

John Warren Smith, M. S., 1900; Grafton. Section Director U. S. Weather Bureau. *16 East Broad St., Columbus, Ohio.*

George Elwin Walker, Littleton. Farmer. *Littleton.*

8—*1

1889.

Fred Harvey Colby, Hopkinton. Fruit Grower. *Prosser, Wash.*

†Linwood Carroll Gillis.

*Louis Jerome Hutchinson, Norwich, Vt.

John Lawrence Norris, Lyme. Norris Brothers, Groceries and Provisions, 1673-1679 Washington Street, Boston; 529-535 Dudley Street, Roxbury; and 587-593 Washington Street, Dorchester, Mass. President of the Dairy Association Com-

pany, Lydonville, Vt.; Secretary and Treasurer of Photo Fabric Company of America. *6 Worcester Sq., Boston, Mass.*

Charles Walter Earl Scott, Winchester. Mechanic.
Darrington, Wash.

David Elmer Stone, Hartford, Vt. Grain Merchant.
Framingham Center, Mass.

Fred Washburne, West Springfield. With Sargent & Co., Foreman of Foundry Department.
56 Carmel St., New Haven, Conn.

7—*1

1890.

John Young Jewett, C. E., Dartmouth, 1895; Gilford. Cement Expert, U. S. Reclamation Service.
Armour Institute, Chicago, Ill.

†Joseph Franklin Preston, Hanover. Clerk. *Boston, Mass.*

Elihu Quinby Sanborn, Webster. Machinist. *Contoocook.*

Clarence Ira Slack, Norwich, Vt. Cashier.
51 North Market St., Boston, Mass.

4—

1891.

Ernest Gowell Cole, Hampton. Postmaster and Merchant.
Hampton.

Russell Marden Everett, Chester. Patent Lawyer and Solicitor.
788 Broad St., Newark, N. J.

Edward Payson Stone, Canaan Center. Farmer. *Orford.*

3—

1892.

Percey Lovejoy Barker, C. E., Dartmouth, 1894; Milford. Supervisor of Bridges and Buildings, N. Y. C. & H. R. R. R.
Jersey Shore, Penn.

Fred Driggs Fuller, Hanover. Chief Chemist, Pennsylvania Department of Agriculture. *State Capitol, Harrisburg, Penn.*

Arthur Benezette Hough, Lebanon. Dairy Farmer. *Lebanon.*

Edward Monroe Stone, C. E., Dartmouth, 1894; Marlborough. Architect and Engineer. *49 Pearl St., Hartford, Conn.*

4—

1893.

Wilton Everett Britton, Ph. D., Yale, 1903; Keene. State Entomologist and Entomologist of the Connecticut Agricultural

Experiment Station. *296 McKinley Ave., New Haven, Conn.*

Frank John Bryant, Enfield. Postoffice Clerk. *Lebanon.*

Charles Elbert Hewitt, M. M. E., Cornell, 1895; Hanover. Professor of Electrical Engineering, New Hampshire College. *Durham.*

Charles Lincoln Hubbard, M. E., 1895; Fitzwilliam. Consulting Engineer. *283 Central St., Auburndale, Mass.*

Orrin Moses James, Northwood. Civil Engineer State Highway Department. *Northwood Narrows.*

Arthur Whitmore Smith, M. Sc., Ph. D., Norwich, Vt. Assistant Professor of Physics, University of Michigan. *1008 Oakland Ave., Ann Arbor, Mich.*

6—

1894.

Bert Sargent Brown, Hanover. Farmer. *Hollis.*

Fred Willis Gunn, Keene. Machinist. *18 Huron St., Providence, R. I.*

Frederic William Howe, Hollis. Professor of Chemistry, Food and Dietetics, State Normal School, Framingham, Mass., Scientific Director Walker Gordon Laboratory Co., and Director of Food Laboratory, Boston Floating Hospital. *793 Boylston St., Boston, Mass.*

3—

1895.

Frank Stanley Adams, Gilsum. In office Vermont Farm Machine Company. *35 Atkinson St., Bellows Falls, Vt.*

Frank Clifton Britton, Keene. With the Sullivan Machinery Company of Claremont and Chicago (Cost-accounting Department). *7 Prospect St., Claremont.*

Henry Elmer Hill, Plainfield, Vt. With the Arizona Lumber Company. *Plainfield, Vt.*

Charles Arthur Trow, Mont Vernon. Chief Engineer in construction of Uba Railroad. *602 Rialto Bldg., San Francisco, Cal.*

4—

1896.

Lewis Harris Kittredge, Keene. President the Peerless Motor Car Company, *Overlook Road, East, Cleveland, Ohio.*

1—

1897.

Harlan Winfred Barney, Grafton. With Amoskeag Mfg. Co. 112 Myrtle St., Manchester.

Carrie Augustus Bartlett, Lee. Teacher. *Route 1, Newmarket.*

Mary Blaisdell Bartlett, (Mrs. I. A. Colby), Epping. *Ellwood City, Penn.*

Walter French Buck, Manchester. Teacher. *129 W. Elm St., Brockton, Mass.*

Arthur Willard Colburn, Dracut, Mass. Farmer. *Dracut, Mass.*

Carrie Lydia Comings, Durham. Teacher, Beverly High School. *28 Abbott St., Beverly, Mass.*

Irving Lyford Dennett. Steam Engineer, Corn Products Refining Company. *Hudson Heights, N. J.*

*Mary Elizabeth Comings (Mrs. I. L. Dennett), Durham.

Elwin Henry Forristall, M. Sc., 1900, Columbia. Supt. Mass. Agricultural Coll. Farm. *Amherst, Mass.*

Leslie David Hayes, Durham. Instructor of Descriptive Geometry, Sibley College, Cornell University. *400 Stewart Ave., Ithaca, N. Y.*

John Norton Hunt, Peterborough, *Peterborough.*

Ellery Dunbar Jenkins, Lee. Chemist, Lowell Fertilizer Company. *P. O. Box 105, Lowell, Mass.*

Woodruff Mason, Stamford, Conn. *Balenville, N. Y.*

Roscoe Hart Shaw, Milton. Dairy Expert, U. S. Department of Agriculture. *University of Missouri, Columbia, Mo.*

Charles William Vickery, Dover. With Claflin Brothers, Mining Engineers. *Nome City, Alaska.*

Delbert Amos Wheeler, South Ashburnham, Mass. Teacher. *Boston, Mass.*

Everett Sidney Whittemore, Colebrook. Proprietor of North Conway Creamery. *North Conway.*

17—*1

1898.

*Richard Cole Butterfield, Westmoreland.

Helen Buzzell, (Mrs. Alexander McRae), Lee. *R. F. D., 5, Dover.*

Bernice Elisabeth Caverno (Mrs. E. H. Hancock), Durham. *Charlestown, Mass.*

Burton Albert Corbett, Colebrook. Seed Potato Specialist and Breeder of Holstein-Friesian Cattle. *Colebrook.*

Alfred Caverly Durgin, Lee. Farmer and Fruit Grower. *R. F. D., Newmarket.*

James Alfred Foord, Walpole. Professor of Farm Administration and Acting Head of the Div. of Agriculture, Massachusetts Agricultural College. *Amherst, Mass.*

John Williams Fullerton, Somersworth. Paymaster with Great Falls Woolen Company. *Somersworth.*

Arthur Given, Durham. Assistant Chemist, U. S. Department of Agriculture, Bureau of Chemistry.
1110 16th St., N. W., Washington, D. C.

Edward Henry Hancock, Belmont. With C. H. Hood Co., Milk business. *Charlestown, Mass.*

Mabel Lucy Hayes, Durham. In charge of Commercial Dept. in High School. *5 Spring St., Newburyport, Mass.*

Tomokichi Hirokawa, B. S., Massachusetts Institute of Technology; Iamabari, Japan. Electrical Engineer, Kyoto Electric Light Company. *Kyoto, Japan.*

Harry Clinton Mathes, Newmarket. Inspector Penn., N. Y. & L. I. R. R. Co. *195 10th St., Long Island City, N. Y.*

Herbert Fisher Moore, M. E., Cornell, 1899; M. M. E., Cornell, 1903; Penacook. Assistant Professor of Theoretical and Applied Mechanics, University of Illinois. Member American Society of Testing Materials.
Laboratory of Applied Mechanics, Champaign—Urbana, Ill.

Gerry Austin Morgan, Goffstown. Draftsman with Cox Multi-Mailer Company. *93 Blackstone St., Woonsocket, R. I.*

Harry Putnam Richardson, Milford. With Southern Pacific R. R.
560 10th St., Oakland, Cal.

Fred Dexter Sanborn, Ashland. Paper Box Manufacturer. Publisher of Weekly Newspaper and Mgr. Job Printing Plant.
Ashland.

Fred Webster Smith, Franklin Falls. Representative of Geo. D. Mayo Machine Co. *Sixth and Arch Sts., Laconia.*

Benjamin D. Tolles, Somersworth. With Great Falls Manufacturing Company, Department of Carding. *Berwick, Maine.*
18—*1

1899.

Henry Clark Baker, South Yarmouth, Mass. Electrical Engineer, Care Crocker-Wheeler. *Ampere, N. J.*

Harry Everett Barnard, Nashua. State Chemist, State House, Indianapolis, Ind.

Harrison Edward Clement, Nashua. Member American Institute Mining Engineers, Mining Engineer. Member of firm Clement & Strange, Engineers and Contractors.
312 Dooley Block, Salt Lake City, Utah.

Irving Atwell Colby, Exeter. Designer with Shelby Steel Tube Co. *Box 66, Ellwood City, Penn.*

Willis Daniel Farley Hayden, Hollis. Farm Manager. *Stark Ave., Dover.*

Frederick Libbey Horton, Dover. Engineering Department General Electric Company. *35 Lovers' Leap Avenue, Lynn, Mass.*

William Elmer Hunt, Nashua. Captain Twenty-Second United States Infantry. Professor of Military Science and Tactics, New Hampshire College. *Durham.*

Lewis Hobart Kenney, M. E., Pownal, Me. Draftsman-in-charge, Dept. of Steam Engineering, U. S. Navy Yard. *U. S. Navy Yard, Phila. Penn.*

Grace Agnes Mark (Mrs. Herbert F. Moore), Gilsum. *710 West Hill St., Champaign, Ill.*

Arthur Zebulon Norcross, Rindge. Farmer. *Pomfret, Conn.*

Harry Nelson Putney, Franklin. Machinist B. & M. R. R. Shops. *Concord.*

Etta Lillian Simpson, Durham. Principal Dartmouth High School. *Dartmouth, Mass.*

12—

1900.

Herbert Prescott Andrews, Hollis. Engineer, Century Electric Co. *404 North 4th St., St. Louis, Mo.*

David Burns Bartlett, J. B. and J. M., Boston University Law School, 1907; Manchester. Lawyer. *53 State St., Boston, Mass.*

Frances Burnham (Mrs. Robert McA. Keown), Durham. *206 No. Brooks St., Madison, Wis.*

Blanche Mary Foye, Durham. Teacher, French and German. *Concord, Mass.*

Charles Elliott Page Mathes. Manager Contract Dept,. L. R. Ry. & Elect. Co. *Little Rock, Ark.*

Edward Emil Nelson, Nashua. Member of American Institute of Mining Engineers. With American Smelting and Refining Co. *62 E St., Salt Lake City, Utah.*

Alvena Pettee (Mrs. Edward E. Nelson), Bachelor's Diploma in Domestic Science, Teachers' College, Columbia University, 1903; Durham. *62 E St., Salt Lake City, Utah.*

Marie Livingstone Robertson (Mrs. Benjamin M. Duggar), Buffalo, N. Y. *Ithaca, N. Y.*

Walter Noah Shipley, Nashua. Steam Turbine Department, Gen-

eral Electric Company, *138 Lakeview Ave., Lynn, Mass.*

Charles Edwin Stillings, Somersworth. Power House Operator. With Interborough Rapid Transit Co., New York City. *74th St. and East River, New York, N. Y.*

John Ernest Wilson, Hollis. Electrical Contractor. *217 1-2 West 1st St., Los Angeles Cal.*

Robert Morrill Wright, Hill. Dealer in Flour, Feed, Grain and Hay. *Hill.*

12—

1901.

Henry Harold Calderwood, Nashua. Turbine Assembly Department with General Electric Co. *428 Central St., Saugus, Mass.*

Charles Henry Courser, Warner. Chief Engineer, Wheelwright Paper Mills, Hardwick, Leominster and Fitchburg. *Leominster, Mass.*

Alice Emerson Dorr, (Mrs. Lewis Cilley); Dover. *11 Summer St., Dover.*

Harry Willis Evans, Portsmouth. Testing Engineer, Commonwealth-Edison Company. *550 La Salle Ave., Chicago, Ill.*

Harry Gilbert Farwell, Keene. Engineering Department, General Electric Company. *403 Summer St., Lynn, Mass.*

Ella Gertrude Gowen, Dover. Giving Lessons in Cookery. *15 Lexington St., Dover.*

Charles Almon Hunt, Nashua. First Lieutenant, Seventh U. S. Infantry. *Fort Brady, Sault Ste. Marie, Mich.*

Edwin Price Jewett, Lakeport. In charge of Prescription Department Walker Gordon Laboratory Co. *2112 Michigan Ave., Chicago, Ill.*

Robert McArdle Keown, Pomona, Fla. Asst. Professor in Machine Design, University of Wisconsin. *206 No. Brooks St., Madison, Wis.*

Elmer Eugene Lyon, Wentworth. Teacher History and Civil Government, Rugby Academy. *4803 St. Charles Ave., New Orleans, La.*

George J. Penneo, Hampstead. Farmer. *Hampstead.*

Harold Morrison Runlett, Durham. Wholesale Shoe Business. With Clark Hutchinson Co., 121 Duane St., New York, N. Y.

Edson Albert Straw. With the A. K. Co., Box Dept. *Ashland.*

13—

1902.

Mary Doe, (Mrs. Charles H. Ayres), Rollinsford.
21 W. 31st St., New York, N. Y.

Edwin W. Gilmartin, Nashua. *9 Middle St., Nashua.*

John C. Kendall, Peterboro. State Dairy Commissioner.
Manhattan, Kans.

Harry M. Lee, Moultonborough. Foreman Buena Vista Farm.
Windsor, Vt.

Abiel A. Livermore, Wilton, Rose Grower.
290 Salem St., Wakefield, Mass.

George E. Merrill, B. Ag., Cornell University, 1903; Newburyport, Mass. Special Field Agent, Bureau of Entomology, U. S. Dept. of Agriculture. *Washington, D. C.*

Charles A. Payne, Portsmouth. Technical Asst. Heating—Engineering Dept., G. E. Co. *320 McClellan St., Schenectady, N. Y.*

Eugene P. Runlett, Durham. With Williams & Clark Shoe Manufacturers, Lynn, Mass.

Arthur L. Sullivan, Suncook. Chemist, Bureau of Chemistry U. S. Dept. of Agriculture.
1461 Chapin Street, N. W., Washington, D. C.

9—

1903.

Harry David Batchelder, West Upton, Mass. Chief Chemist, Carnegie Steel Co., Sharon Coke Works, South Sharon, Penn.
Box 491, Sharon, Penn.

Edgar Forest Bickford, Rochester. Asst. Electrical Engineer, B. & N. St. Ry. Co. & O. C. St. Ry. Co.
84 State St., Boston, Mass.

Frank Ray Brown, Durham. Instructor in Shopwork, New Hampshire College. *Durham.*

Everett William Burbeck, Haverhill. Mining & Civil Engineer with Oliver Iron Mining Co. *Box 370, Eveleth, Minn.*

Everett Garfield Davis, Newmarket. Provision Dealer.
Kingston.

Albert Noah Otis, Durham. With Ford, Bacon & Davis, Consulting Engineers and Contractors. *24 Broad St., New York, N. Y.* *806 Gay St., Knoxville, Tenn.*

Ralph Harvey Rollins, East Concord. Engineer U. S. Reclamation Service. *Yuma, Ariz.*

Morris Archer Stewart, Dover. Chemist. *121 Belknap St., Dover.*

David Albert Watson, Durham. Farming.
R. F. D. No. 1, Durham.

Melvin Johnson White, M. A., Univ. of Wisconsin, 1907; Farmington. Instructor of American History and Civics in High School. *208 No. Brooks St., Madison, Wis.*

10—

1904.

Leander Ashton, Pittsfield. Carnation Grower.
High Street, Framingham Center, Mass.

Walter Allen Barker, Pittsfield. Civil Engineer with Stone & Webster Engineering Corporation.
15 Exchange St., Boston, Mass.

Edgar Charles Bickford, Durham. Electrical Assistant at B. E. Ry. E. E. Office. *552 Harrison Ave., Boston, Mass.*

Percy Anderson Campbell, Litchfield. Professor of Animal Industry, University of Maine. *Orono, Maine.*

Carroll Winfred Farr, North Weare. Dairy Farmer and Breeder of Ayrshire Cattle. *North Weare.*

Joseph Ezra Goodrich, New Durham. Master of Ridge School.
Chapin Cottage, Washington, Conn.

George Herbert Hill, La Crosse, Wis. Draughtsman at Office of Supt. of Shops, Chicago, Burlington & Quincy R. R.
C. B. & Q., Aurora, Ill.

Thomas Jefferson Laton, Nashua. Instructor in Mechanical Drawing, New Hampshire College. *Box 155, Durham.*

Raymond Louis Lunt, Dover. Telephone Engineer, Western Electric Co. *463 West St., New York, N. Y.*

Arthur Ronello Merrill, North Bridgton, Me. Dairy Farmer.
Norfolk St., Holliston, Mass.

Samuel Ambrose Richardson, Charlestown. Foreman for G. M. Gest, Conduit Contractor. *277 Broadway, New York, N. Y.*

11—

1905.

John Henry Chesley, Rockingham. Turbine Testing Department, General Electric Company. *77 Mall St., West Lynn, Mass.*

Cleon Orestes Dodge, Sunapee. Chemist, Bureau of Chemistry.
Bureau of Chemistry, Washington, D. C.

Silas Bryden Hayden, South Natick, Mass. Engineer.
Box 958 Gary, Ind.

Harry Linwood Hayes, Exeter. Testing Dept., General Electric Company. *Schenectady, N Y.*

Warren Chauncey Hayes, Durham. Graduate Student, New Hampshire College. *Durham.*

Fred Harvey Heath, Warner. Student in Graduate School of Yale University and Asst. in Qualitative Analysis in Kent Laboratory.
P. O. Box 712, Yale Station, New Haven, Conn.

*Harold Nims Knight, Marlborough.

Joseph Wesley Moreton, Medford, Mass. Electrical Engineer, Niagara, Lockport and Ontario Power Co.
Y. M. C. A. Bldg., Buffalo, N. Y.

Orlo Dudley Mudgett, Gilmanton. Sales Department, Westinghouse Electric & Manufacturing Company.
716 Board of Trade Bldg., Boston, Mass.

Horace James Pettee, Durham. Structural Draftsman, Illinois Steel Co. *550 La Salle Ave., Chicago, Ill.*

Arthur Mahlon Pike, Dover. Construction Foreman, General Electric Co. *Schenectady, N. Y.*

Fred Silver Putney, M. S., Penn. State College, 1908, Hopkinton. Scholar at Univ. of Missouri, 1908-'09. *Columbia, Mo.*

John Leslie Randall, M. S., Lee. Teacher, State Normal School. *California, Penn.*

William Orrin Robinson, M. S., Marlborough. Physical Chemist, Bureau of Soils, Dept. of Agriculture.
Bur. of Soils, Washington, D. C.

*Harry Union Russell, West Derry.

Elmer Seth Savage, Lancaster. Instructor in Animal Husbandry, Cornell University. *606 No. Aurora St., Ithaca, N. Y.*

Castine Caroline Swanson, Cambridge, Mass.
10 Hollis St., Cambridge, Mass.

Frank Alvin Tinkham, Grafton. Farming. *Grafton.*

18—*2

1906.

Samuel Taylor Adams, Pittsfield. *Durham.*

Stuart Kendrick Barnes, Walpole. Chief Chemist, Retort Coke Oven Co. *Cleveland, Ohio.*

Charles S. Batchelder, South Hampton. Market Gardening.
Waban, Newton Centre, Mass.

Willis Cassius Campbell, West Windham.
4651 Drexel Boulevard, Chicago, Ill.

John Dustin Clark, Nashua. Associate Professor of Chemistry, Univ. of New Mexico. *Albuquerque, N. Mex.*

Clarence Elbert Clement, Derry. Dairyman.
Cherry Hill Farm, Beverly, Mass.

Ernest Luther Converse, Amherst. Instructor in Sciences, Virginia Institute. *Bristol, Va.*

Neil Starr Franklin, Bernardston, Mass. With Westinghouse Electric and Manufacturing Co.
1105 South Ave., Wilkinsburg, Penn.

Carl Tilson Fuller, Nashua. Chemical Engineer, General Electric Co. Lamp Works. *Harrison, N. J.*

William Safford Gooch, Exeter. Engineering Department, New England Tel. & Tel. Co. *164 High St., Boston, Mass.*

Ralph Edward Gowen, Stratham. Running Power House for Carbon Coal Co. *Carbon, W. Va.*

Edwin Davis Hardy, Nashua. Testing Steam Turbines.
E. Pittsburg, Penn.

Cyrus Fremont Jenness, Gonic. Market Gardening.
Waban, Newton Centre, Mass.

Allen Montague Johnson, Nashua. *9 Locust St., Nashua.*

Wallace Fuller Purington, South Yarmouth, Mass. Assistant Chemist, New Hampshire State Board of Health, Laboratory of Hygiene, Concord. *Concord.*

Edwin Jay Roberts, Laconia. Graduate Student, Assistant in Kent Chemical Laboratory.
Box 712, Yale Station, New Haven, Conn.

Roy Vance Swain, Barrington, With Autocar Company.
45 Wyoming Ave., Ardmore, Penn.

Charles Leo Tuttle, Exeter. Engineering Department, New England Tel. and Tel. Co. *164 High St., Boston, Mass.*

18—

1907.

Leon Dexter Batchelder, West Upton, Mass. Asst. Florist, Dept. of Horticulture, Cornell University. *Ithaca, N. Y.*

Philip Ray Berry, Alton. *Alton.*

Andrew Broggini, Concord. Turbine Testing Dept., General Electric Company. *77 Mall, West Lynn, Mass.*

Harold Hurst Dickey, Manchester. Dept. Manager John A. Whalley Company. *209 Coleman Bldg., Seattle, Wash.*

Carl Austin Dodge, New Boston. Asst. Chemist, Wellsbach Light Company. *Gloucester City, N. J.*

Harry Edward Ingham, Nashua. Instructor in Shopwork, New Hampshire College. *Box 155, Durham.*

Frank Davis Lane, Manchester. Instructor.
79 Walnut St., Manchester.

Ralph Albion Littlefield, Portsmouth. Dairy Farming.
N. Reading, Mass.

Bernard C. Noyes, Lisbon. Massachusetts State Forest Service.
Room 7, State House, Boston, Mass.

John Glenn Powers, Concord. Instructor in the Abbott School. *Farmington, Maine.*
Frank Wiggin Randall, Portsmouth. *Portsmouth.*
Ellice Storrs Townsend, (Mrs. C. D. Hazen, Jr.), Lebanon. *White River, Vt.*
Lucia Soule Watson, Durham. Teacher in Enfield High School. *Wells St., Enfield.*
Arthur Jason Woodward, Lancaster. Testing Dept. General Electric Company. *303 Lenox Road, Schenectady. N. Y.*

14—

1908.

Waldo Lawrence Adams, Townsend, Mass. *Durham.*
Arthur Hosea Barton, Newport. *Durham.*
Arthur Milliken Batchelder, Suncook. *Suncook.*
Minot Giles Buss, Wilton. Teacher Berlin High School. *Berlin.*
Lawrence Andrew Carlisle, Exeter. *18 Oak St., Exeter.*
James Dennis Cash, Massabesic. Teacher. *Manchester.*
Mary Abbie Chesley, Durham. Teacher. *Thetford, Vt.*
Francis Clough, Contoocook. General Electric Company. *Lynn, Mass.*
Charles Francis Cone, Nashua. *4 Myrtle St., Nashua.*
Merton Maine Cory, Nashua. *12 Park St., Nashua.*
John Timothy Croghan, Concord. *Concord.*
Katharine DeMerritt, Durham. Teacher. *124 W. Broad St., Westerly, R. I.*
Walter Woods Evans, East Kingston. Graduate Student at University of Toronto. *Chemical Dept., University of Toronto.*
Oren Lovell Farwell, Chesham. Chesham.
Harry Fifield French, Plymouth. Asst. Chemist, State Lab. of Hygiene, Concord. *16 South St., Concord.*
Stanley Fiske Hill, Nashua. *Nashua.*
Merritt Chase Huse, Concord. *11 No. Spring St., Concord.*
William R. Kirkpatrick, Nashua. Gypsy Moth Inspector, U. S. Govt. *Box 77, Nashua.*
John Joseph O'Connor, Portsmouth. *3 Porter St., Portsmouth.*
John Caleb Page, Dover. *Sixth St., Dover.*
George Arthur Perley, Goffstown. Graduate Student at Cornell University. *715 State St., Ithaca. N. Y.*
Sarah Elizabeth Pettee, Durham. Student at Teachers' College, Columbia University. *1230 Amsterdam Ave., New York, N. Y.*
James Henry Priest, Manchester. *711 Beech St., Manchester.*
Moses Herman Sanborn, Fremont. *Fremont.*
Dean Fred Smalley, Walpole. Private Business. *Walpole.*

Carl Brown Tarbell, Milton. Surveying. *No. Rochester.*

Ray Emery Wadleigh, Kensington. Illuminating Engineer, Southern Electric Company. *Baltimore, Md.*

George Lyman Waite, Dunbarton. *Concord, Route 2.*

Harold Duncan Walker, Kittery, Me. *Kittery, Me.*

Francis Ward Woodman, W. Derry. Graduate Student and Fellow at University of Missouri. *417 Witt St., Columbia, Mo.*

30—

TWO YEAR COURSE IN AGRICULTURE.

Lyman Charles Stratton, Hollis, 1897. Superintendent Dairy Farm. *St. George, Ga.*

Charles Wesley Martin, Durham, 1898. Clerk and Assistant with Sacramento Gas, Electric & Railway Company. *3219 Magnolia Ave., Oak Park, Sacramento, Cal.*

George Henry Wheeler, Temple, 1898. Farmer. *Temple.*

Fred Joseph Durell, Newmarket, 1900. Farmer. *Newmarket.*

Harry Alvin Elliott, Lyme, 1900. Blacksmith. *Lyme.*

Edward Augustus Hills, Hollis, 1900. Farmer. *Hollis.*

Albert Cate Knowles, Epsom, 1900. Farmer and Seed Agent. With Dunlap & Sons, Nashua. *Epsom.*

†Robert Hale Pearson, Webster, 1900.

Charles Nicklin Blodgett, Hebron, 1901. Manager Breezy Point Farm, Breezy Point. *Warren.*

Harry Douglass Verder, Hollis, 1901. Stock Raiser. *Hollis.*

Rufus Leonard Cushman, North Adams, Mass. 1901. Gardener. *No. Auburn, Mass.*

†George R. Brew, Lowell, Mass., 1902.

Carroll W. Farr, North Weare, 1902. B. S. New Hampshire College, 1904.

George F. Hills, Hollis, 1902. Farmer. *Hollis.*

Walter E. Quimby, Deerfield, 1902. Farm Superintendent. *Center Belmont, Maine.*

Walter P. Tenney, Chester, 1902. Homedale Farm. *Chester.*

†Thornton N. Weeks, Greenland, 1902.

Robert E. Whittier, Deerfield, 1902. Supt. Maplewood Farm. Danvers, Mass.

Edward C. Wilson, Wilton, 1902. Live Stock Commission, Union Stock Yards, care of Wood Bros. *6022 Princeton Ave., Chicago, Ill.*

Harry Garfield Brierley, Dover, 1903. Farmer. *Stratham.*

†George Grover Manning, Boston, Mass., 1903.

James Henry Nixon, East Brentwood, 1903. Superintendent Red Hill Farm. *R. F. D. 1. Centre Harbor.*

Roscoe Franklin Swain, South Hampton, 1903. Dairy Farmer. *Amesbury, Mass.*

Erland Graves Batchelder, Wilton, 1904. Dairy Farmer, Poultryman and Fruit Grower. *Wilton.*

Wesley Pillsbury Flint, Newburyport, Mass., 1904. Field Assistant in Entomology, Office State Entomologist. *Urbana, Ill.*

Henry Marston Shurbert, Northwood Ridge, 1904. Gardener for Mrs. W. E. Barrett. *West Newton, Mass.*

Arthur G. Dunn, Harrisville, 1905. Manager of Mine Brook Farm. *R. F. D., Medfield, Mass.*

Henry N. Gowing, Dublin, 1905. Poultryman and Fruit Grower. *Dublin.*

Alfred Walter Clough, 1906. Farmer. *Greenland.*

Oliver Carter Dimond, West Concord, 1906. Farmer. *R. F. D. No. 12, West Concord.*

Ralph Wayne Forristall, Alstead, 1906. Farmer. *Alstead.*

Stanley Hargreaves, 1906. Assistant, Forest Park, Springfield, Mass.

Robert S. Sawyer, 1906. Farmer. *Walpole.*

David Raymond Batchelder, Wilton, 1907. Dairyman. *Cherry Hill Farm, Beverly, Mass.*

Alfred Elwin Blood, East Sullivan, 1907. Farmer. *East Sullivan.*

Abram Lawrence Dean, Taunton, Mass., 1907. *Madbury.*

Simes Frink, Newington, 1907. Farmer. *Newington.*

William Patrick Hickey, Bow, 1907. Timekeeper, Carnegie Steel Company. *Newark, N. J.*

Frederick Henry Charles Kampe, East Alstead, 1907. Agriculturist. *East Alstead.*

Lee Augustus Parker, Keene, 1907. Gardener. *195 Eastern Ave., Keene.*

Lewis Elwell Sanborn, Ashland, 1907. Dairyman. *380 Plainfield St., Springfield, Mass.*

Ernest Eugene Tucker, Durham, 1907. Head Gardener Private Estate. *Dublin.*

Charles Shannon Wright, Portsmouth, 1907. Student New Hampshire College. *Durham.*

George A. Holmes, Langdon; 1908. *Langdon.*

Guy Leavitt, Sanbornton, 1908. *Sanbornton.*

Harold Thom Littlefield, Salem Depot, 1908. *Salem Depot.*

SUMMARY.

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Agriculturists	44
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ALPHABETICAL LIST OF GRADUATES.

Adams, E. E., 1878.
Adams, G. E., 1885.
Adams, F. S., 1895.
Adams, L. A., 1908.
Adams, S. T., 1906.
Adair, R. K., 1877.
Alden, R. S., 1885.
Aldrich, H. C., 1876.
Aldrich, W. H., 1875.
Aldrich, T. E., 1881.
Andrews, H. P., 1900.
Angier, W. E., 1885.
Arnold, E. F., 1883.
Ashton, L., 1904.
Bailey, C. H., 1879.
Bailey, E. A., 1885.
Baker, H. C., 1899.
Ballard, W. P., 1871.
Barker, P. L., 1892.
Barker, W. A., 1904.
Barnard, H. E., 1899.
Barnard, H. L., 1881.
Barnes, S. K., 1906.
Barney, H. W., 1897.
Bartlett, Miss C. A., 1897.
Bartlett, D. B., 1900.
Bartlett, E., 1872.
Bartlett, Miss M. B., 1897.
Barton, A. H., 1908.
Batchelder, D. R. (2 year), 1907.
Batchelder, A. M., 1908.
Batchelder, C. S., 1906.
Batchelder, E. G. (2 year), 1904.
Batchelor, H. D., 1903.
Batchelor, L. D., 1907.
Berry, P. R., 1907.
Bickford, E. C., 1904.
Bickford, E. F., 1903.
Bickford, P. G., 1885.
Bigelow, F. L., 1883.
Birtwhistle, F. S., 1883.
Blodgett, C. N. (2 year), 1901.
Blood, A. E. (2 year), 1907.
*Boardman, G. J., 1881.
Boutwell, H. L., 1882.
Brew, G. R. (2 year), 1902.
Brierley, H. G. (2 year), 1903.
Brigham, E. L., 1876.
Brill, A. W., 1885.
Bristol, E. F., 1881.
Bristol, N. D., 1883.
Britton, F. C., 1895.
Britton, W. E., 1893.
Broggini, A., 1907.
*Brooks, H., 1877.
Brooks, P. C., 1885.
Brown, B. S., 1894.
Brown, F. R., 1903.
Bryant, F. J., 1893.
Buck, W. F., 1897.
Bugbee, D. J., 1882.
Burbeck, E. W., 1903.
Burleigh, A. T., 1881.
*Burleigh, R. F., 1882.
Burnham, Miss F., 1900.
Buss, M. G., 1908.
Butterfield, J. W., 1876.
*Butterfield, R. C., 1898.
Buzzell, Miss H., 1898.
Calderwood, H. H., 1901.
Campbell, P. A., 1904.
Campbell, W. C., 1906.
Carlisle, L. A., 1908.
Carpenter, L. J., 1882.
*Carr, M. B., 1888.
Carson, J. W., 1877.
Cash, J. D., 1908.
Caverno, Miss B. E., 1898.
Chamberlin, A. F., 1876.
Chapin, R. C., 1879.

*Dead.

Chesley, J. H., 1905.
Chesley, Miss M. A., 1908.
*Chubert, C. O., 1877.
Clark, J. D., 1906.
Clement, C. E., 1906.
Clement, H. E., 1899.
Clough, A. W. (2 year), 1906.
Clough, F., 1908.
Colby, F. H., 1889.
Colby, I. A., 1899.
Colburn, A. W., 1897.
Cole, E. G., 1891.
Comings, Miss C. L., 1897.
Comings, F. P., 1883.
*Comings, Miss M. E., 1897.
Cone, C. F., 1908.
Conradi, Albert; M. S., 1902.
Converse, E. L., 1906.
Corbett, B. A., 1898.
Cory, M. M., 1908.
Courser, C. H., 1900.
Cragin, L. M., 1879.
Croghan, J. T., 1908.
Cross, A. B., 1876.
*Cummings, E. S., 1884.
Currier. W. S., 1887.
Curtis, F. P., 1875.
Cushman, R. L. (2 year), 1901.
Davis, E. G., 1903.
Davis, F. A., 1886.
Davis, F. C., 1884.
Davis, H. G., 1888.
Dean, A. L. (2 year), 1907.
Dearborn, N.; D. Sci., 1901.
DeMerritt, Miss K., 1908.
Dennett, I. L., 1897.
Dewey, E. P., 1882.
Dimond, O. C., (2 year), 1906.
Dickey, H. H., 1907.
Dodge, C. A., 1907.
Dodge, C. O., 1905.
Doe, Miss M., 1902.
Dorr, Miss A. E., 1901.
Dunn, A. G. (2 year), 1905.
Durell, F. J. (2 year), 1900.
Durgin, A. C., 1898.
*Edwards, C. A., 1877.
Eldredge, F. E., 1873.
Elliott, H. A. (2 year), 1900.
Ely, F. D., 1881.
Emerson, F. J., 1885.
Emerson, F. V., 1875.
Emery, S. E., 1881.
Evans, H. W., 1901.
Evans, W. W., 1908.
Everett, R. M., 1901.
Farr, C. W., 1904; (2 year), 1902.
Farwell, H. G., 1901.
Farwell, O. L., 1908.
*Flint, W. F., 1877.
Flint, W. P. (2 year), 1904.
Everett, R. M., 1891.
Follansbee, F. H., 1883.
Foord, J. A., 1898.
Forristall, E. H., 1897.
Forristall, R. W. (2 year), 1906.
Foster, S. M., 1884.
Foye, Miss B. M., 1900.
Franklin, N. S., 1906.
French, A. C., 1883.
French, H. F., 1908.
Frink, S. (2 year), 1907.
Fuller, C. T., 1906.
Fuller, F. D., 1892.
Fullerton, J. W., 1898.
Gay, J. E., 1883.
Gerrish, E. C., 1888.
Gillis, L. C., 1889.
Gilmartin, E. W., 1902.
Given, A., 1898.
Gooch, W. S., 1906.
Goodrich, J. E., 1904.
Gowen, Miss E. G., 1901.
Gowen, R. E., 1906.

*Dead

Gowing, H. N. (2 year), 1905.
Gunn, F. W., 1894.
Hall, C. C., 1877.
Hancock, E. H., 1898.
Hardy, A. W., 1887.
Hardy, C. W., 1875.
Hardy, E. D., 1906.
Hardy, M. F., 1874.
Hargreaves, S. (2 year), 1906.
Harvey, J. E., 1886.
Hayden, S. B., 1905.
Hayden, W. D. F., 1899.
Hayes, H. L., 1905.
Hayes, L. D., 1897.
Hayes, Miss M. L., 1898.
Hayes, W. C., 1905.
Hazen, A., 1885.
Hazen, C. H., 1881.
Hazen, W. N., 1888.
Heath, F. H., 1905.
Henry, J. G., 1877.
Hewitt, C. E., 1893.
Hickey, W. P. (2 year), 1907.
Hill, G. H., 1904.
Hill, H. E., 1894.
Hill, S. F., 1908.
Hills, E. A. (2 year), 1900.
Hills, G. F. (2 year), 1902.
Hirakawa, T., 1898.
*Hollister, C. P., 1877.
Holman, G. M., 1877.
Holmes, G. A. (2 year), 1908.
*Holmes, N. C., 1879.
Hood, C. H., 1880.
Horton, F. L., 1899.
Hough, A. B., 1892.
Howe, F. W., 1894.
Hubbard, C. A., 1877.
Hubbard, C. L., 1893.
Hunt, C. A., 1901.
Hunt, J. N., 1897.
Hunt, W. E., 1899.
Huse, M. C., 1908.
*Hutchinson, L. J., 1889.
Ingham, H. E., 1907.
James, O. M., 1893.
Jenkins, E. D., 1897.
Jenness, C. F., 1906.
Jewell, H., 1875.
Jewett, J. Y., 1890.
Jewett, E. P., 1901.
Johnson, A. M., 1906.
Kampe, F. H. C. (2 year), 1907.
Kelley, E. D., 1883.
Kendall, J. C., 1902.
Kenney, L. H.; M. E., 1906.
Keown, R. McA., 1901.
*Kilburn, E., 1878.
Kimball, H. H., 1884.
Kimball, W. W., 1876.
Kirkpatrick, W. R., 1908.
Kittredge, L. H., 1896.
*Knight, H. N., 1905.
Knowles, A. C. (2 year), 1900.
Lane, F. D., 1907.
Laton, T. J., 1904.
*Leavitt, C. O., 1875.
Lee, H. M., 1902.
Littlefield, H. T. (2 year), 1908.
Littlefield, R. A., 1907.
Livermore, A. A., 1902.
Loveland, G. A., 1882.
Lunt, R. L., 1904.
Lyon, E. E., 1901.
*McGregor, J. L., 1875.
Mann, M. B., 1884.
Manning, G. G. (2 year), 1903.
Mark, Miss G. A., 1899.
Marston, F. P., 1881.
Mason, J. W., 1882.
Mason, W., 1897.
Martin, C. W. (2 year), 1898.
Mathes, C. E. P., 1900.
Mathes, H. C., 1898.

*Dead.

Megrath, W. A., 1881.
Merrill, A. R., 1904.
Merrill, G. E., 1902.
Moore, G. M., 1884.
Moore, H. F., 1898.
Moreton, J. W., 1905.
Morgan, A. B., 1883.
Morgan, G. A., 1898.
Mudgett, O. D., 1905.
Mullins, G. M., 1885.
Nelson, E. E., 1900.
Nichols, H. A., 1882.
Nixon, J. H., (2 year), 1903.
Norcross, A. Z., 1899.
Norris, J. L., 1889.
Norris, Z. A., 1884.
Noyes, B. C., 1907.
O'Connor, J. J., 1908.
O'Gara, E. D., 1888.
Otis, A. N., 1903.
Page, J. C., 1908.
Parker, D. D., 1876.
Parker, F. C., 1879.
Parker, L. A., (2 year), 1907.
Payne, C. A., 1902.
Pearson, R. H. (2 year), 1900.
Peck, E., 1875.
Penneo, G. J., 1901.
Perkins, L., 1871.
Perley, G. A., 1908.
Pettee, Miss S., 1908.
Pettee, H. J., 1905.
Pettee, Miss A., 1900.
Pike, A. M., 1905.
Porter, G. E., 1888.
Powers, J. G., 1907.
Preston, J. F., 1890.
Priest, J. H., 1908.
Purrington, W. F., 1906.
Putney, F. S., 1905.
Putney, H. N., 1899.
Quimby, W. E. (2 year), 1902.
Ramsey, I. W., 1875.
Randall, F. W., 1907.
Randall, J. L.; M. S., 1906.
Record, C. E., 1878.
Richardson, H. P., 1898.
Richardson, S. A., 1904.
Roberts, E. J., 1906.
Robertson, Miss M. L., 1900.
Robinson, W. O.; M. S., 1906.
Rollins, R. H., 1903.
Ruevsky, B. S., 1886.
Runlett, E. P., 1902.
Runlett, H. M., 1901.
*Russell, H. U., 1905.
Sanborn, E. Q., 1890.
Sanborn, F. D., 1898.
Sanborn, G. A., 1887.
Sanborn, L. E. (2 year), 1907.
Sanborn, M. H., 1908.
Sanders, C. H., 1871.
Sargent, G. J., 1888.
Savage, E. S., 1905.
Savage, H. N., 1887.
*Sawyer, H. A., 1874.
Sawyer, R. S. (2 year), 1906.
Scott, C. W. E., 1889.
Seward, O. L., 1875.
Shaw, R. H., 1897.
Shipley, W. N., 1900.
Shurbert, H. M. (2 year), 1904.
Simpson, Miss E. L., 1899.
Slack, C. I., 1890.
Smalley, D. F., 1908.
Smith, A. W., 1893.
Smith, F. W., 1898.
Smith, J. F., 1873.
Smith, J. W., 1888.
Stanton, F. T., 1881.
Stewart, M. A., 1903.
Stickney, V. H., 1881.
Stillings, C. E., 1900.
Stone, D. E., 1889.

*Dead

Stone, E. M., 1892.
Stone, E. P., 1891.
Stratton, L. C. (2 year), 1897.
Straw, A. E., 1901.
Sullivan, A. L., 1902.
Swain, R. F. (2 year), 1903.
Swain, R. V., 1906.
Swanson, Miss C. C., 1905.
Tarbell, C. B., 1908.
Tenney, W. P. (2 year), 1902.
Thompson, E. C., 1884.
*Thompson, F. E., 1882.
Thurber, M. F., 1886.
Tinkham, F. A., 1905.
Tolles, B. D., 1898.
Townsend, Miss E. S., 1907.
Trow, C. A., 1895.
Tucker, C. H., 1873.
Tucker, E. E. (2 year), 1907.
Tuttle, C. L., 1906.
Verder, H. D. (2 year), 1901.
Vickery, C. W., 1897.
Wadleigh, R. E., 1905.
Waite, G. L., 1908.
Waldron, B. L., 1887.
Walker, G. E., 1888.
Walker, H. D., 1908.
Wallace, S. A., 1881.
Washburn, F., 1889.
Wason, E. H., 1886.
Watson, D. A., 1903.
Watson, Miss L. S., 1907.
Weeks, T. N. (2 year), 1902.
Wheeler, C. A., 1877.
Wheeler, D. A., 1897.
Wheeler, G. H. (2 year), 1898.
Whitcher, G. H., 1881.
White, F. A., 1872.
White, M. J., 1903.
Whittemore, E., 1877.
Whittemore, E. S., 1897.
Whittier, R. E. (2 year), 1902.
Whittier, W. L., 1883.
Wilkins, G. H., 1879.
Willard, E. M., 1875.
Wilson, E. C. (2 year), 1902.
Wilson, J. E., 1900.
Wood, A. H., 1885.
Wood, G. P., 1886.
Woodman, F. W., 1908.
Woodward, A. J., 1907.
Woodward, C. M., 1883.
Wright, C. S. (2 year), 1907.
Wright, R. M., 1900.

*Dead

SPECIMEN ENTRANCE EXAMINATION PAPERS FOR FOUR YEAR COURSES.

ENGLISH.

The purpose of this examination is to test (1) the candidate's knowledge and appreciation of certain specified works, and (2) his ability to write correctly. As bearing on the latter point, he is advised to go over his paper carefully before the end of the time allowed, correcting any inaccuracies, not neglecting capitals and punctuation.

I. (1) Give and illustrate the rules for the comma.
(2) Discuss the use of quotation marks.

II. Arrange in chronological order and name the authors of the following works: Silas Marner, Macbeth, The Sir Roger de Coverly Papers, The Passing of Arthur, Life of Goldsmith, Ivanhoe and The Ancient Mariner.

III. Write not less than 200 words upon two of the following topics:
The Phantom Ship and its Passengers.
The Moral Degeneration of Macbeth.
Sir Roger de Coverly at the Theatre.
Caesar's Behavior on the Day of his Death.
The Plot of Silas Marner.

IV. Discuss fully and carefully four of the following topics:
The topic sentence and its development.
The respective advantages of the long sentence, the periodic sentence, the balanced sentence.
Unity in the paragraph.
Coherence in the composition.
Emphasis in the sentence.

V. Quote at least ten lines from Milton.

AMERICAN HISTORY.

1. Give an account of the principal discoveries, explorations and settlements, made previous to 1607, within the present mainland limits of the United States, by (a) The Northmen, (b-c) The Spanish, (d) The French, (e) The English.

2. Give an account of the American share in the following:— (a) King William's War, (b) Queen Anne's War, (c) King George's War, (d-e) The French and Indian War.

3. Give a brief account of (a) the Stamp Act, (b) the boundaries of the United States according to the Treaty of 1783, (c-d) the nature and history of the Articles of Confederation,

(e) Financial condition of the United States under the Articles of Confederation.

4. Explain the following questions which have been connected with issues since 1865:—(a-b) The conflict over reconstruction, (c) The race problem, (d) The silver coinage struggle, (e) The Venezuelan affair, 1895.

5. Select two subjects from the following and write at least fifty words upon each:—(a) Early education in America; (b) The virtues and limitations of Quakers and Puritans; (c) Patriotism and lack of patriotism during the Revolution; (d) Clay's character and services; (e) The Know-Nothing Party.

6. Give the substance of the last three amendments to the Constitution.

ANCIENT HISTORY.

1. Islands about Greece:—(a) Three important islands or groups in the Aegean; (b) The important island near the eastern coast; (c) Some important island near the western coast; (d-e) The historically important island midway between Greece and Egypt. The important traditions and early history of that island.

2. (a) History and influence of the Delphian oracle. (b) Three classes of people in Sparta. (c-d) Government of Sparta. (e) Myth of Lycurgus.

3. The Persian Invasion:—(a) Brief account of principal expedition sent by Darius; (b-c) Brief accounts of the four important battles resulting from the invasion of Xerxes; (d-e) Outline of collateral reading on the Persian Invasion.

4. Outlines of life and public services:—(a) Pericles; (b) Alcibiades; (c) Socrates; (d) Xenophon; (e) Epaminondas.

5. (a) The causes in Rome leading to the establishment of the tribunate; (b-c) The history and character of the laws of the twelve tables. (d) the war with the Greeks (Pyrrhus). (e) Roman road making.

6. (a-c) Brief outlines of the three wars between Rome and Carthage. (d) The Roman provincial system. (e) Brief accounts of Marius and Sulla.

7. Some account of five books used for collateral reading in Ancient History.

ENGLISH HISTORY.

1. (a-c) Outline map showing the situation of England, the form of the coast, five important rivers, and five important places.

(d) The early Germans: home, customs, institutions.

(e) The English conquest; purpose and manner of coming of the English; principal events.

2. The Hundred Years' War.
   (a) Accession of Edward III: character; causes for trouble between England and France; preparations for war.
   (b-c) Course of war to 1377: important events; Treaty of Bretigny; causes for English success; renewal of war; state of affairs at close of reign.
   (d-e) Renewal of war by Henry V: causes; condition of France; Agincourt; Treaty of Troyes; Joan of Arc; close of the war.
3. England under the Tudors, 1485-1558.
   (a) The House of Tudor: characteristics; policy.
   (b) The establishment of despotism: measures of Henry VII; condition of the country; position of Parliament; reasons for acceptance of Tudor despotism.
   (c) The new learning in England: character of the English movement; leaders; connection with Reformation.
   (d) The Reformation under Henry VIII.
   (e) The Catholic Reaction under Mary.
4. Wars of Empire, 1689-1815.
   (a) Battle of the Boyne. (b) King William's War. (c) Queen Anne's War. (d) King George's War. (e) Strife for the Ohio Valley.
5. War of the French Revolution. (a) The French Revolution. (b-c) War to Peace of Amiens. (d-e) Trafalgar. Waterloo.

MEDIAEVAL AND MODERN HISTORY.

1. Give an outline of the history of Kingdom of the Ostrogoths.
2. Explain the meaning of each of the following words: Janizaries, reliefs, escheats, aids, villeins.
3. What were the characteristics which distinguished the early Teutons.
4 Give an account of the Third Crusade.
5. In one hundred words give the history of Spain from A. D. 700 to A. D. 1500.
6. Give the history of the Russo-Turkish War of 1877-78.
7-8. Write a sketch of each of the following:—Wallenstein, Richelieu, Colbert, Garibaldi.
9. Locate each of the following and describe some historical event connected with the place:—Narva, Versailles, Trafalgar, Sadowa.
10. Draw a map showing the political divisions in the southeast of Europe.

ENTRANCE ALGEBRA.

1 State the general laws for exponents in multiplication and division.

2. Perform the indicated operations and simplify

$$(a+b+c+d)^2 - (a-b-c-d)^2$$

3. Divide

$8x^{m+4} - 18x^{m+3} - 13x^{m+2} + 9x^{m+1} + 2x^m$ by $4x^m + x^{m-1} - 2x^{m-2}$

4. A father is four times as old as his son, but in 24 years the father will be only twice as old as the son. What is the present age of each.

5. Write the factors of

$14\,a^4b + 21\,a^3b^2 - 35\,a^2b^3 - 42\,ab^4$

$15\,c^2 + 22\,c\,x + 8x^2$

$x^5 - y^5$

6. (a) Change to an equivalent fraction having the lowest common denominator $\dfrac{1}{x+1} + \dfrac{1}{(x+1)^2} + \dfrac{1}{(x+1)^3}$

(b) Simplify $\dfrac{m-5x}{m+5x} + \dfrac{10\,m\,x}{m^2-25\,x^2}$

7. Solve for x $\dfrac{1}{x+1} + \dfrac{1}{x+2} = \dfrac{1}{x+3}$

8. Solve for x $\begin{cases} 3x^2 - 8x - 16 = 0 \\ \dfrac{a+x}{a-x} = \dfrac{x-2a}{x+2a} \end{cases}$

9. Expand by the binomial theorem $(2x + 4b)^4$

10. (a) Simplify $\dfrac{c}{x}\sqrt{\dfrac{x^4}{c^3}}$, $\dfrac{2}{m^2}\sqrt[3]{\dfrac{54\,m^4}{x}}$

(b) Multiply $\sqrt{-5x}$; $\sqrt[3]{-8\,a\,x^3}$; $\sqrt[4]{81\,a\,b\,x^7}$

(c) Multiply $-\sqrt{2c}$; $-3\sqrt{-2a}$; $+2\sqrt{-3b}$; $+a\sqrt{3c}$; $-2\sqrt{bc}$

PLANE GEOMETRY.

1. Prove that if two oblique lines drawn from a point in a perpendicular cut off equal distances from the foot of the perpendicular, they are equal.

2. Prove that if two parallel lines are cut by a third line the alternate interior angles are equal.

3. The exterior angle at base of an isosceles triangle equals 125 degrees, what are the angles of the triangle?

4. Prove that the three bisectors of the angles of a triangle meet at a point.

5. Prove that the diagonal of a parallelogram divides the

figure into two equal triangles.

6. Prove that the sum of the interior angles of any polygon is equal to two right angles, taken as many times less two as the figure has sides.

7. In equal circles two angles at the centre have the same ratio as their intercepted arcs when the arcs are incommensurable.

8. The arc intercepted by a tangent to a circle and a diameter is 75 degrees, what is the angle between the tangent and the produced diameter?

9. Construct a mean proportional to two given lines.

10. Prove if a straight line divides two sides of a triangle proportionally, it is parallel to the third side.

SOLID GEOMETRY.

1. If a line is perpendicular to each of two lines at their point of intersection, it is perpendicular to the plane of the two lines.

2. If a line is perpendicular to a plane, any plane passing through the line is perpendicular to the plane.

3. The sum of the face angles of a convex polyedral angle is less than four right angles.

4. A plane passed through the diagonally opposite edges of a parallelopiped divides it into two equivalent triangular prisms.

5. A triangular prism may be divided into three equivalent triangular pyramids.

6. The lateral surface of the frustum of a regular pyramid is equal to one-half of the product of the slant height by the sum of the perimeters of the bases.

7. The surface of a sphere is equal to the area of four great circles.

8. The measure of a spherical angle is the arc of a great circle described from its vertex as a pole, included between its sides produced if necessary.

9. The area of a spherical triangle is equal to the product of the spherical excess by a tri-rectangular triangle.

10. The angles of a spherical triangle are the supplements of the sides opposite in the polar triangle.

PLANE TRIGONOMETRY.

1. Define cosine, tangent, secant, anti-tangent, radian.
2. Change 3/5 π to degrees; 38° to radians.
3. Determine sine, cosine and tangent of 30°; of 45°.
4. Prove $\sin 2x = 2 \sin x \cos x$.
5. Prove $\sin 2x = \dfrac{2 \tan x}{1 + \tan^2 x}$
6. The sign of an angle is 2/7. Find remaining functions of same angle.
7. In a right angled triangle one angle is 25°. The hypotenuse is 340. Write formula for side opposite the given angle.
8. In an oblique angled triangle, given the three sides; write formulas for area and one angle.
9. $\sin 2x - \tan x = 0$. Solve for x.

PHYSICS.

1. Tell what you can of the standards of length, mass and time. What is meant by fundamental units? Distinguish between the gram as a unit of mass, and as a unit of force. Define force and the components of a force. How do you account for the variation in the gravitational units of force as we go from one locality to another?

State and illustrate Newton's laws of motion. State the laws of hydrostatics. State Archimedes' principle. Explain the construction of a simple barometer, and outline carefully the principles upon which its theory is based. Explain why high mountain climbing often causes pain and bleeding in the ears and nose. State the Kinetic Theory of Gases. State the simple machines. Explain the siphon.

2. What is the distinction between heat and temperature? State the effects of heat. Illustrate each. Explain what is meant by saturated and unsaturated vapors, and give their laws.

What is meant by "Absolute Zero?" How do you account for the protection of fish life in winter? What provision is made in steel bridges for the changes due to temperature variations? Distinguish heat of fusion and heat of vaporization. State the principles upon which the ventilation of houses depends.

3. Account for the difference in the intensity of shadows formed by opaque bodies. What is meant by diffusion of light? by reflection? by refraction? the critical angle? a continuous spectrum? Draw sketches to show the formation of images produced by concave mirrors and lenses. Explain the simple microscope. Account for the formation of the rainbow.

4. State the sources of sound, and the characteristics of media by which it is transmitted. Distinguish longitudinal and transverse wave motion. State the characteristics of musical sounds. Define each. Define an echo, resonance, a tone, a harmonic, and sympathetic vibrations. Outline the use of the lips, tongue and teeth in the production of the vowels and consonants.

5. Devise an experiment to show that a piece of iron attracts a magnet just as truly as the magnet attracts the iron. What is meant by a magnetic line of force? a field of force? by the declination of a compass needle? Devise an experiment to show conclusively the existence, simultaneously, of two unlike kinds of electrification when it is produced by friction. Explain the electrophorous. State the effects of an electric current. Describe a simple voltaic cell and tell why it may rapidly run down. State a rule for determining the polarity of a magnet made by placing around it a coil of wire carrying a current.

CHEMISTRY.

1. Define Synthesis, Efflorescence, a base, polymerism, reduction.

2. Give the occurrence in nature and properties of nitrogen and enumerate some of its commercial compounds.

3. If the valence of an element x is 1 write the simplest formula for its carbonate, nitrate, borate and sulphite.

4. Complete the following reactions :

$Fe + HCL =$	$CaCO_3 + HCL =$
$Cu + H_2SO_4 =$	$P + O =$
$Cu + HNO_3 =$	$Ag_2SO_4 + NaCl =$
$Ca(OH)_2 + HNO_3 =$	$Na_2SO_4 + BaCl_2 =$
$H_2SO_4 + KOH =$	$AsCl_3 + H_2S =$

5. If one liter of Hydrogen is mixed with 1500 c.c. of Oxygen and the mixture exploded what gas and how much remains unacted upon?

6. How many grains of Ammonium Hydroxide is needed to neutralize 294 grains of sulphuric acid?

7. Give the commercial source, method of preparation and uses of NH_3.

8. Briefly describe two methods of determining molecular weights.

9. Give the occurrence and properties of zinc and describe the method of preparing the metal from its sulphide.

10. State the Law of Mass Action ; the Law of Dulong & Petit ; the Law of Definite Proportions ; the Periodic Law.

Atomic weight of nitrogen = 19.
" " " sulphur = 32.

ZOOLOGY.

1. Define a Protozoan and name two animals which belong to this class.

2. Give the internal structure of an earthworm. How does the earthworm differ from the Coelenterales and Arthropods?

3. Define and describe an insect. How does an insect breathe, and where are its organs of smell and excretion?

4. What is meant by Evolution? How is one species supposed to give rise to another?

5. Define hermaphrodite, hybrid, parasite, mimicry, Aves.

6. Name one animal from each of the following orders,—Mollusca, Arthropoda, Mammalia, Echinodermata and Pisces.

ELEMENTARY BOTANY.

1. Define calyx, petal, stamen, ovary, spike, tendril.

2. What is meant of self-pollination? Cross-pollination? Give an example of each. Name three agencies of cross-pollination.

3. Describe an exogenous stem as seen in cross-section. How does it differ from an endogenous stem?

4. Define tuber, bulb, stolon, bract, internode, petiole. Give an example of each.

5. Define respiration. Define photosynthesis. Compare the two as to necessary conditions, products and value to plant.

6. What are the following and what part does each play in the life of the plant: transpiration, stoma, epidermis, chlorophyll, protoplasm?

7. Give the meaning of the following: plumule, cotyledon, radicle. testa, legume.

8. Describe the form, structure and reproduction of a particular cryptogamous or flowerless plant.

GEOLOGY.

1. Describe the destructive and constructive work of a glacier. What characters of a land surface indicate the action of glaciers during some past age?

2. How are mountains formed? Diagram.

3. Define—continental shelf, anticline, talus, stratum, delta.

4. How is coal formed? What different kinds are there and how are they formed?

5. How is soil formed? Name all the agencies which aid in soil formation.

6. For what was the Triassic period noted? Describe some of the animals and plants then living.

7. How are coral reefs formed? What is an atoll?
8. Define a fossil. Name several of the more common ones.

FRENCH.

1. Where have you studied French? How long? What books have you read?
2. Synopsis simple and compound tenses:
   (1) Third person singular of aller.
   (3) Second person plural of faire.
3. Conjugate:—
   (1) Present of recevoir.
   (2) Future of venir.
   (3) Conditional of vouloir.
4. Principal parts of italicized verbs in 6, 7 and 8.
5. Translate:—
   (1) Should I study well, the master would be glad.
   (2) Durham, September 3, 1907. (Write out date).
   (3) I have not received any money.
   (4) When he comes, he will tell me what he has done.
   (5) You must remain at home today.
   (6) Although he is poor, he is happy.
   (7) Have you finished your lessons? I have finished them.
   (8) How long have you been here?
   (9) I have been here for three days.
   (10) Give me some black coffee, if you please.
6. Translate:—

Un célèbre médecin avait soigné un petit enfant pendant une maladie dangereuse. La mère reconnaissante arrive chez le sauveur de sons fils. "Docteur, *dit*-elle, il y a des services qui ne se payent pas. Je ne *savais* comment reconnaître vos soins. J'ai pensé que vous *voudriez* bien accepter ce porte-monnaie que j'ai brodé de ma main.—Madame, répliqua un peu rudement le docteur, la médecine n'est pas une affaire de sentiment et nos soins veulent être rémunérés en argent. Les petits cadeaux *entretiennent* l'amitié mais ils n'entretiennent pas nos maisons. —Mais docteur, dit la dame surprise et blessée, parlez, fixez un chiffre.—Madame, c'est deux mille francs." La dame ouvre le porte-monnaie, en tire cinq billets de banque de mille francs, en donne deux au médecin, remet les trois autres dans le porte-monnaie, salue froidement et se retire.

7. Translate:—

Enfin, ayant *attendu* jusqu'à près de neuf heures, l'ennemi arrivant à pas accélérés, et les ponts ne *pouvant* plus servir

qu'aux Russes si on différait davantage, il se décida, le coeur navré, et détournant les veux de cette scène affreuse, à *faire mettre* le feu. Sur-le-champ des torrents de fumée et de flammes enveloppèrent les deux ponts, et les malheureux qui étaient dessus se précipitèrent pour n'être par entraînés dans leur chute. Du sein de la foule qui n'avait point encore passé, un cri de désespoir s'éleva tout à coup: des pleurs, des gestes convulsifs s'apercevaient sur l'autre rive. Des blessés, de pauvres femmes tendaient les bras vers leurs compatriotes qui s'en allaient, forcés malgré eux de les abandonner.

8. Translate:—

Mais leur douleur bruyante produisait moins d'impression que le désespoir meut d'un personnage qui attirait tous les regards. C'était le malheureux père, qui allant d'un cadavre à l'autre, soulevait leurs têtes souillées de terre, baissait leurs lèvres violettes, *soutenait* leurs membres déjà roidis, comme pour leur éviter les cahots de la route. Parfois on le voyait *ouvrir* la bouche pour parler, mais il n'en sortait pas un cri, pas une parole. Toujours les yeux fixés sur les cadavres, il se heurtait contre les pierres, contre les arbres, contre tous les obstacles qu'il recontrait.

ELEMENTARY GERMAN.

I. Translate.

Frau Biesendahl. Herr Oberlehrer, Sie wissen, dass wir auf eine sehr gute Erziehung halten und dass wir jede Roheit von *unseren Kindern* fernzuhalten suchen. Mein Mann ist Beamter und ich bin die Tochter eines Zollassistenten, da brauch' ich wohl nicht erst zu sagen, dass die Kinder bei uns im Hause niches Schlechtes hören. Herr Flemming erlaubt sich aber Ausdrücke gegen die Kinder, die einfach empörend sind.

II. Translate.

Sie *sprachen* nichts mehr; sie gingen stumm neben einander zum See hinab. Die Luft war schwül, im Westen stieg schwarzes Gewölk auf. "Es wird gewittern," sagte Elisabeth, indem sie ihren Schritt *beeilte*', Reinhardt nickte, und beide gingen rasch am Ufer entlang bis sie ihren Kahn *erreicht* hatten.

Während der Uberfahrt *liess* Elisabeth ihre Hand auf dem Rande des Kahnes ruhen. Er blickte beim Rudern zu ihr hinüber, sie aber sah an ihm vorbei in die Ferne. So glitt sein Blick herunter und *blieb* auf ihrer Hand; und die blasse Hand *verriet* ihm, was ihr Antlitz ihm *verschwiegen* hatte.

III. Translate.

"Thue das nicht!" sagte die Nachtigall. "Der hat ja Gutes

gethan, so lange er konnte! Behalte ihn nur! Ich aber kann im Schlosse nicht wohnen, lass mich daher kommen, wenn ich selbst Lust habe, da will ich des Abends auf diesem Zweige sitzen und dir etwas vorsingen, damit du froh werden kannst! Ich komme weit herum, zu Armen und Reichen, zu Glücklichen und Unglücklichen und werde dir von vielem singen können, was in deinem Reiche *passiert* und dir *verborgen bleibt.* Aber eins musst du mir versprechen."—"Alles!" sagte der Kaiser und stand da in seiner kaiserlichen Tracht, die er selbst *angelegt* hatte, und drückte den goldenen Säbel an sein Herz.

IV. Translate.

Als einst der Doktor ein neues Prachtwerk mitgebracht hatte und mit Freude wahrnahm, wie Marie mit einer gewissen Ostentation das Gespräch mit *dem Grafen* abbrach, um sich an einem Seitentisch von ihm über die abgebildeten Antiken belehren zu lassen, bemerkte der edle Magyar *der Kanzleirätin,* er für seinen Teil hege nicht das mindeste Interesse für den alten Plunder und überlasse dergleichen Sachen den Herren Gelehrten, worauf die Kanzleirätin erwiderte, sie finde das sehr begreiflich; ein Kavalier wie Graf Csanady habe eben eine andere Sphäre als die Bourgeoisie.

V. Prin. parts italicized verbs in II and III.

VI. Translate:

1. Yesterday the day was very beautiful.
2. I took a book and went into the garden to study.
3. The fisherman's dog came out of the hut.
4. I gave him bread: it pleased him.
5. Then he fetched the fisherman from the house and we went to the river to fish.
6. These old soldiers will sleep, but the young king will not see them.
7. The old woman has become very angry.
8. I put the clock on the table at half past eight.
9. If he were here he would go to the theatre.
10. He speaks as if he had much money.

VII. Decline italicized words in I and IV.

VIII. Give synopsis 3rd sing. simple and compound tenses of gehen.

Decline pres. dürfen: wollen: lehren: geben: versprechen.

LATIN ELEMENTARY.

I. Translate into idiomatic English:—

Flumen est Arar, quod per fines Aeduorum et Sequanorum

in Rhodanum influit, incredibili lenitate, ita ut oculis, in utram partem fluat, iudicari non possit. Id Helvetii ratibus ac lintribus iunctis transibant. Ubi per exploratores Caesar certior factus est, tres iam partes copiarum Helvetios id flumen traduxisse, quartam fere partem citra flumen Ararim reliquam esse, de tertia vigilia cum legionibus tribus e castris profectus ad eam partem pervenit, quae nondum flumen transierat. Eos impeditos et inopinantes aggressus magnam partem eorum concidit; reliqui sese fugae mandarunt atque in proximas silvas abdiderunt. (Caesar. Gallic War: Book I.)

II.

Decline fines (line 1) certior (line 5) flumen (line 6)

Syntax of lenitate (line 2) oculis (line 2) legionibus (line 7)

Explain mode of possit (line 3) traduxisse (line 6)

Compare proximas (line 11)

III. Translate into idiomatic English:—

Qua consuetudine cognita Caesar, ne graviori bello occurreret, maturius, quam consuerat, ad exercitum proficiscitur. Eo cum venisset, ea, quae fore suspicatus erat, facta cognovit: Missas legationes ab nonnullis civitatibus ad Germanos invitatosque eos, uti ab Rheno discederent, omniaque, quae postulassent, ab se fore parata. Qua spe adducti Germani latius vagabantur et in fines Eburonum et Condrusorum, qui sunt Treverorum clientes, pervenerant. Principibus Galliae evocatis Caesar ea, quae cognoverat, dissimulanda sibi existimavit eorumque animis permulsis et confirmatis equitatuque imperato bellum cum Germanis gerere constituit.

IV. Syntax of Rheno (line 5) sibi (line 9)

Inflect proficiscitur (line 2) and postulassent (line 5)

Prin. parts of consuerat, (line 2) facta (line 3) vagabantur (line 7)

Decline equitatu (line 10) spe (line 6)

Derivation of legationes (line 4) civitatibus (line 4)

V. Translate into Latin:—

1. Caesar is about to cross the river in order to attack the enemy.
2. They went from the camp at night.
3. If the Germans should send soldiers to us within two days, we would not proceed against them.
4. Since he knew that the soldiers were ready, he quickly crossed the bridge and advanced into the enemy's territory.

ADVANCED LATIN.

I. Translate into idomatic English:—

Hic quis potest esse, Quirites, tam aversus a vero, tam praeceps, tam mente captus, qui neget haec omnia, quae videmus, praecipueque hanc urbem deorum immortalium nutu ac potestate administrari? Etenim, cum esset ita responsum, caedes, incendia interitum rei publicae, comparari, et ea per cives, quae tum propter magnitudinem scelerum non nullis incredibilia videbantur, ea non modo cogitata a nefariis civibus, verum etiam suscepta esse sensistis. Illud vero nonne ita praesens est, ut nutu Iovis optimi maximi factum esse videatur, ut, cum hodierno die mane per forum meo iussu et coniurati et eorum indices in aedem Concordiae ducerentur, eo ipso tempore signum statueretur? Quo collocato atque ad vos senatumque converso omnia quae erant cogitata contra salutem omnium, illustrata et patefacta vidistis. (Cicero. Catiline. III.)

Give reason for mode of neget (line 2) esset (line 4.)

Explain derivation of magnitudinem (line 6) collocato (line 12.)

Syntax of nullis (line 7) civibus (line 8.)

II. Translate into idomatic English.

Ut primum cessit furor, et rabida ora quierunt:
Incipit Aeneas heros: Non ulla laborum,
O virgo, nova mi facies inopinave surgit:
Omnia praecepi, atque animo mecum ante peregi.
Unum oro; quando hic inferni ianua regis
Dicitur, et tenebrosa palus Acheronte refuso;
Ire ad conspectum chari genitoris, et ora
Contingat; doceas iter, et sacra ostia pandas.
Illum ego per flammas et mille sequentia tela
Eripui his humeris, medioque ex hoste recepi;
Ille meum comitatus iter, maria omnia mecum,
Atque omnes pelagique minas coelique ferebat
Invalidus, vires ultra sortemque senectae.
Quin, ut te supplex peterem, et tua limina adirem,
Idem orans mandata dabat. Natique patrisque,
Alma, precor, miserere: potes namque omnia; nec te
Nequicquam lucis Hecate praefecit Avernis.

Scan the following lines, marking principal caesura, etc. Line 1; line 4; line 8.

Explain the form quierunt (line 1) the mode of doceas (line 8.)

Syntax of natique (line 15) lucis (line 17.)

IV. If any one shall accuse me because I have not arrested so wicked a man rather than let him go from the city, that is not my fault, but the fault of the times. Cataline ought to have been killed long ago, but there are very many who defend him and do not believe what I report. If I had punished him by death, his accomplices would have escaped. What crimes have they not committed these years! Would that you knew their plots! There is no nation whom we fear, but we must now contend with all these desperate men.

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